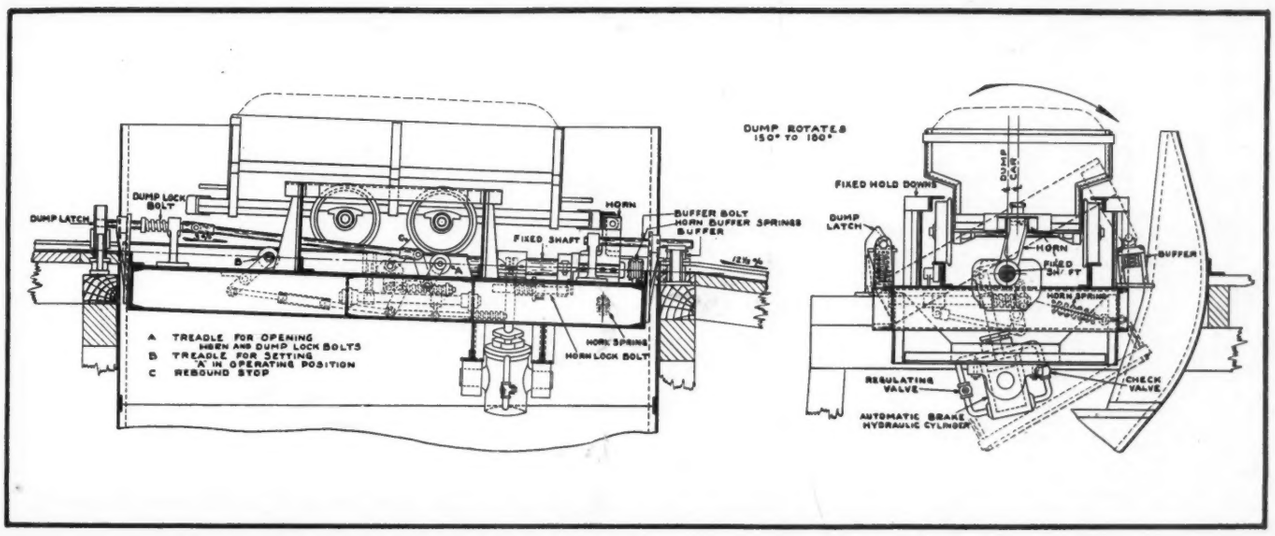
McGraw-Hill Publishing Company, Inc. June 2, 1927 Twenty Cents per Copy



Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

Volume 31 — New York, June 2, 1927 — *Number* 22

COAL AGE

With which is consolidated "The Colliery Engineer" and "Mines and Minerals"
R. DAWSON HALL, *Engineering Editor*

McGRAW-HILL PUBLISHING COMPANY, INC.
Tenth Avenue at 36th Street, NEW YORK, N. Y.

NEW YORK DISTRICT OFFICE, 285 Madison Ave.
WASHINGTON, Colorado Building
CHICAGO, 7 South Dearborn Street
PHILADELPHIA, 1600 Arch St.
CLEVELAND, Guardian Building
ST. LOUIS, Bell Telephone Building
SAN FRANCISCO, 883 Mission Street
LONDON, 6 Bouverie Street, E. C. 4. London

Cable Address: "Machinist, N. Y."

The annual subscription rate is $3 in the United States, Canada, Mexico, Alaska, Hawaii, the Philippines, Porto Rico, Canal Zone, Cuba, Honduras, Nicaragua, Dominican Republic, Salvador, Peru, Colombia, Bolivia, Ecuador, Argentina, Chile, Spain, Panama, Brazil, Uruguay, Costa Rica, Guatemala, Haiti and Paraguay. Extra foreign postage $3 (total $6 or 25 shillings). Single copies, 20 cents.
Change of Address—When change of address is ordered the *new* and the *old* address must be given. Notice must be received at least ten days before the change takes place.

JAMES H. MCGRAW, President
JAMES H. MCGRAW, JR., V.-P. and Treas.
MALCOLM MUIR, Vice-President
EDWARD J. MEHREN, Vice-President
MASON BRITTON, Vice-President
EDGAR KOBAK, Vice-President
C. H. THOMPSON, Secretary

Publishers of
Coal Age — Engineering and Mining Journal
Engineering News-Record — American Machinist
Power — Chemical and Metallurgical Engineering
Ingeniería Internacional — Radio Retailing
Bus Transportation — Electric Railway Journal
Electrical World — Construction Methods
Industrial Engineer — Electrical Merchandising
Electrical West
(Published in San Francisco)
American Machinist—European Edition
(Published in London)

Published weekly
Entered as second-class matter Oct. 14, 1911, at the Post Office at New York, N. Y., under the Act of March 3, 1879.
Printed in U. S. A.
Member Audit Bureau of Circulations
Member Associated Business Papers, Inc.

Number of copies printed this issue, 9,727

Effects of

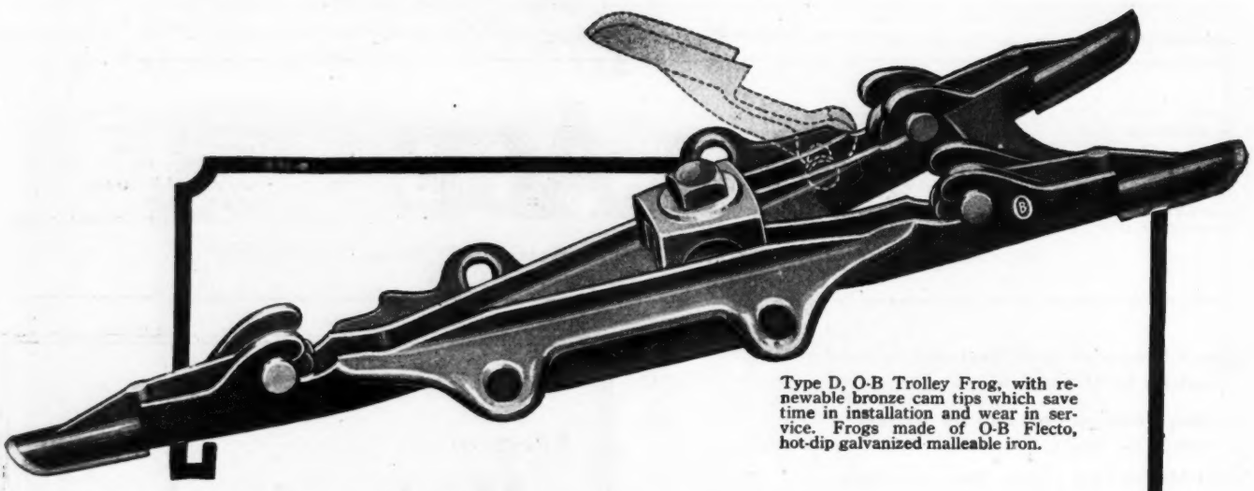
Modernization

MUCH has been said and written during the recent past concerning modernization of mines and the necessity therefor. It is perhaps a saving grace of mankind in general to "be from Missouri"—to be a "doubting Thomas" until thoroughly convinced. The mine operator is healthily prone to look askance at new ideas and equipment until they have demonstrated their utility. This is particularly true of him who operates a medium to average sized mine.

Next week *Coal Age* will tell how modernization has paid in a small mine. Throughout the country as a whole the small operations greatly outnumber the larger ones and contribute much to the aggregate output, yet it is these lesser operations that have clung most tenaciously to the methods of the past. It is here that the hand shovel makes its strongest stand against the loading machine. Managers and engineers alike will, therefore, be interested in the results set forth next week.

AUTOMATIC SUBSTATIONS SAVE MONEY

In the next issue, also, this periodical will treat another subject of much interest to coal men—automatic substations. Power utilization inevitably brings its accompanying problem of power distribution. The more thoroughly mining men understand the basic principles underlying efficient electrification the more capable are they to handle successfully the coal properties entrusted to their care.



Type D, O-B Trolley Frog, with renewable bronze cam tips which save time in installation and wear in service. Frogs made of O-B Flecto, hot-dip galvanized malleable iron.

Frogs that Don't Croak

IN ONE system of mines where haulage is extremely heavy and trolley operating conditions most severe, the mining men have come to refer to O-B Trolley Frogs as "the Frogs that don't Croak".

These O-B Trolley Frogs have won this reputation only after the most critical tests. The choice of O-B Frogs in these mines resulted from their ability to withstand the knocks and jolts; to stand up under a half-hundred different strains "long after", as the superintendent explains, "the ordinary trolley frog had croaked".

It is just this exceptional ability to give longer service that is reducing frog replacements and making O-B Trolley Frogs the choice of thousands of mining men.

They have recognized the structural and operating superiorities which make O-B Trolley Frogs better—"The Frogs that don't Croak".

Discuss these frogs with your O-B Salesman. He has facts and figures that will prove profitable to you.

Moral: There is more production and less "croaking" with O-B Trolley Frogs on the line.

O-B Trolley Frogs are listed on pages 567 to 579 of the big O-B No. 20 Catalog. Have you this big book? If not, one will be gladly sent at your request.

Ohio Brass Company, Mansfield, Ohio
Dominion Insulator & Mfg. Co., Limited
Niagara Falls, Canada
410M

Ohio Brass Co.

PORCELAIN INSULATORS
LINE MATERIALS
RAIL BONDS
CAR EQUIPMENT
MINING MATERIALS
VALVES

SALES OFFICES: NEW YORK CHICAGO PHILADELPHIA PITTSBURGH CLEVELAND SAN FRANCISCO LOS ANGELES

COAL AGE

McGRAW-HILL PUBLISHING COMPANY, INC.
JAMES H. McGRAW, *President*
E. J. MEHREN, *Vice-President*

Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

R. DAWSON HALL
Engineering Editor

Volume 31 | NEW YORK, JUNE 2, 1927 | Number 22

Fire Prevention Engineering

TOO OFTEN the public waits till the night of a fire to give consideration to protection. Even then with the evidence before him the average citizen cannot determine just what ought to be done. The need for fire-prevention experts is obvious. Citizens, and even engineers, have little background for such work.

The National Fire Protection Association has had two fire-prevention engineers at work during the past two years. It is collecting a fund to increase the number to ten wherever the local loss record indicates that fire conditions should be remedied. These men will work through local fire-prevention agencies and civic organizations. This movement deserves support.

Of all our wastes the most elemental are fire and accident. So obvious are they that the public has passed them by and has sought out the more recondite means of saving. A half billion of dollars is lost yearly by fires—a loss that raises the cost of living. To this must be added the loss of 12,000 to 15,000 lives from fires and the many accidents resulting therefrom.

Cutting Down Item 1 In the Cost Sheet

NOT ALL the necessary tools for the mechanized mine can be purchased for dollars and cents from the manufacturer, for some of the most effective are not mechanical but mental. A new manner of thinking is as much needed as a new means of shoveling or conveying. The operator cannot leave all his thinking to the manufacturer and his staff. He must do some planning and contriving himself.

The manager of earlier days tried to effect economies almost everywhere except at the working face. He subordinated the interest of the miner always to the need for keeping the day laborer busy.

If a switch had to be placed, the miner waited till the tracklayer could find time to lay it. If water was not pumped, the room or the entry was kept idle until the pumper made his regular rounds to make the defective pump run. The place might be idle a day or a week while the needed equipment arrived by slow train, and if funds were low the pump might never come. If gas filled a place it might be kept idle for a day or more till the bratticeman had time to get a line of brattice erected. If rails were lacking the miner might be kept waiting for these. Often, every piece of equipment that the miner would use was kept in scanty supply. Every service to be performed for him was delayed until the inadequate force of daymen could get round to the job. The word "Rush" was rarely written on this class of service. The current had to be adequate for haulage, however inadequate it might be for cutting. All the jobs done for the man at the face could be delayed without cost to the company. Other jobs affected the efficiency of the day laborer and had to be done promptly.

With the mechanized mine and with day labor, all the services rendered to the man at the face have to be rushed even at an increase in cost because every idle man reduces profit and tonnage. The easy-going indifference to the miner ceases. As the men at the working face are more numerous than the others the importance of the change in viewpoint is evident. The face worker becomes in a real sense a part of the picture. His presence at the working face, his output, his efficiency are now economic factors and no longer matters of relative unimportance. The number of men needed to load the coal now determines its cost. No longer is the manager indifferent to the tonnage produced by the operative at the face. The whole problem of coal production has become of vital interest to him. It will pay him perhaps to have an excess of locomotive drivers, roadmen, pumpers, bratticemen and tracklayers if thereby he can manage to scrape along with few less men at the face.

These new conditions which make economies possible in every operation instead of in only a few enable the staff at a coal mine to make larger profits or by fumbling methods to make big losses. This puts a premium on effective management. Formerly the costs of producing the coal at the face, which stood at the head of the costs of distribution, were fixed by the contract and the veriest dub of a manager was as effective in this matter as the most expert. The cost of cutting, shooting, posting and loading at a well-managed mine was the same as in one badly managed. A mechanically-operated mine, one that is well-equipped with both machinery and brain power will be able to make savings in its big items as well as in the small and the profit will be proportional. In like manner the losses of the mine with bad management and inadequate equipment will be large, and a number of companies that command neither skill nor adequate mechanism will be forced to suspend. Others having conditions unfavorable for operation will be obliged to go out of business, though conveyors seem likely to make the race between mines with thin coal and bad roof more equal than before the introduction of conveying machinery.

As Compared

DURING a recent inspection trip through a rolling mill which ships polished sheets of non-ferrous metal, as one of its products, it was noted that six men were stationed at the outlet end of a continuous annealing furnace. Their duty was to pick up each sheet as it came from the furnace, carry it a few feet, and drop it straight down onto a pile without bending or scratching the surfaces.

This operation is one which could be done, apparently, by a machine of light weight. The men lifted the sheets without show of effort. From the standpoint of work accomplished they seemed to have an easy job. The larger part of their time was spent in waiting for the

next sheet to come out of the furnace. Why a machine was not being used for the work was not explained.

There may have been a good reason, but from the standpoint of a coal mine executive it was an example illustrating that even in factories where bad top and the other natural variables encountered in a mine are not present, hand methods are still being used for some purely mechanical operations.

Considering the difficulties encountered, mining is not so far behind the other industries in mechanization of operations as some critics might wish us to believe. No other industry has exhibited a more earnest and extensive effort toward complete mechanization. The many types of loading machines that have been developed at great expense and the widespread experiments now being conducted with modified mining methods are evidences of that effort.

A New Kind of Thinking

NEW EQUIPMENT has changed the coal industry and with the change comes a new viewpoint, a new kind of thinking. The industry must not only buy new machinery but must equip itself with new talent. In fact even that is not sufficient; the change must be not only mechanical or physical and mental, but moral also.

Formerly only a few men were on day wage and it was possible to find among the mine force enough men who would work by the hour and would labor steadily without constant supervision and solely by reason of their interest in the work. Now, of the whole force, the same co-operation is demanded, and new ideas must be instilled in everyone, from tipple to working face. The interlocking of one man's labors with that of the others demands a new spirit and only those who have created this unity of purpose can hope to get effective operation.

In too many mines has grown up a spirit of opposition. The miners like those whom Chief Inspector Hay, of Oklahoma, described in his address before the Mine Inspectors' Institute of America, are opposed to anything the operator advocates on the sole ground that what he wants must be for that reason inimical to the miner's interest.

In some cases perhaps his own attitude has stimulated this hostile feeling. He has accepted the system—why call it a principle?—of "an eye for an eye and tooth for a tooth" and given as good as he took, instead of realizing that he had a permanent interest in inspiring good will by patience and firmness.

Men are strange creatures. At one mine, more than three decades ago, was a foreman who sold places. The men from whom he took money were accustomed to paying for jobs in their own country and bore him no ill will.

Another foreman in a nearby mine took no money bribes but seeing that men were plentiful, and water also, hit on the expedient of getting each man to dig a ditch in the entry from his room to the next, thus saving the company money. Times were bad, and the men did the work without pay. There was no wage contract, and the impost was equivalent to a slight reduction in pay enabling the company to continue operation. But the men were not accustomed to any such impost. It was not a condition of hiring but of retaining a job, and so it was as unusual in Europe as in America.

Times improved, and the foreman who had caused the ditch to be cut could get no men. He was for this reason discharged. Yet the man who had taken bribes, which the men who had paid them regarded as quite a recognized practice, got along well with everybody, even though the English-speaking men wondered why the European strangers from Central Europe got all the best places.

In place of the discharged foreman came another, lively and debonair, who never fussed nor fumed, never seemed to care about the outcome of the day's work, neither took bribes nor laid any impost and, though times soon became bad again, made a good showing. He had the good will of everyone, and it was worth far more to him and to the company than his predecessor's imposts and niggardliness.

Many of the mining problems are like this one. The miner has his time-honored ways. They may be fads, they may appear to him as rights, and ill indeed it is to differ unnecessarily with them. Perhaps if the foreman had argued the need for reducing expenses and keeping the mines working, the company might have had its ditch and the foreman his job.

A number of new adjustments are being made just now. Men are finding difficulty in meeting them. They are made for the good of the company. For this reason, where men are embittered, all the changes are likely to be regarded by the miner as essentially wrong. Everyone will be opposed to any modification made in his work, but if the right spirit has been engendered, if the operator has occasionally shown a spirit of compromise, the workman will be a little more disposed to side with him and help him with his problems.

All this requires patience and the possibilities of a mutual understanding must not be denied because the results are not at first all that were anticipated. A long disagreement is often fanned into flame by the first exhibit of kindness, as domestic affairs too frequently prove. Firmness, calmness and the long view are essential to harmony.

Many a problem in life depends for its solution more upon the innate nobleness in man than on his brain or his mechanical equipment. In successful mining, human engineering must play its part. One misjudgment may wreck years of understanding. Moreover, what must be forgiven the miner may be an unpardonable offense against good judgment in the operator or his manager.

In these days of mine idleness, a strict régime may perhaps be enforced. However, if it comes not with generous acquiescence but with a begrudging spirit, it will not give good results because duty interlaces with duty in any mine that is mechanically operated. Good intentions and co-operative service are needed now more than ever before or the machines will work irregularly. Then if there is failure and irritation, new difficulties will arise, and every day the operation of the machines will be less productive.

With machine loading the oil of good nature is as greatly needed as lubricating oil. If the spirit of co-operation is present, if everyone on the job is "sold" on the innovation and if all the equipment of car distribution and dumping is working well, the mechanical problems of loading are a long way toward being solved. The mental and moral habits of the operator, manager, mine foreman and the sub-bosses are essentially a part in any scheme for the introduction of mechanical loading.

Minor Changes at Shaft Bottom Increased Mine Capacity by 10 per Cent

Mines Were Planned for a Production that Was Easily Surpassed, Further Increase Being Limited by Hoisting Capacity—Clipping Two Seconds from the Hoist Cycle Accomplished Desired Results

OBTAINING more than rated capacity from equipment without injury or overload to it is one way of holding down or reducing production cost. To increase materially the hoisting capacity of a modern shaft mine without change in size of cars, or loading, usually entails expensive alterations to the hoist, gearing or motor.

This was not the case, however, at mines Nos. 20 and 21, of the Island Creek Coal Co., Holden, W. Va. These operations were opened in 1923, each of them being planned for an output of 2,500 tons per day. Not long ago these productions had been increased to over 3,000 tons and the limit of hoisting capacity was near. As a result of a close study of the caging and dumping period of the hoisting cycle, and minor but ingenious changes to the caging equipment, the hoisting capacity has been increased practically 10 per cent, and each mine is now producing over 3,500 tons per day in less than 7 hr. of actual hoisting time.

This speeding up was accomplished by cutting 2 sec. from the time required to cage the cars. This operation now averages 2¼ sec., as compared to 4¼ sec. before the changes were made. No alterations were necessary at the dump.

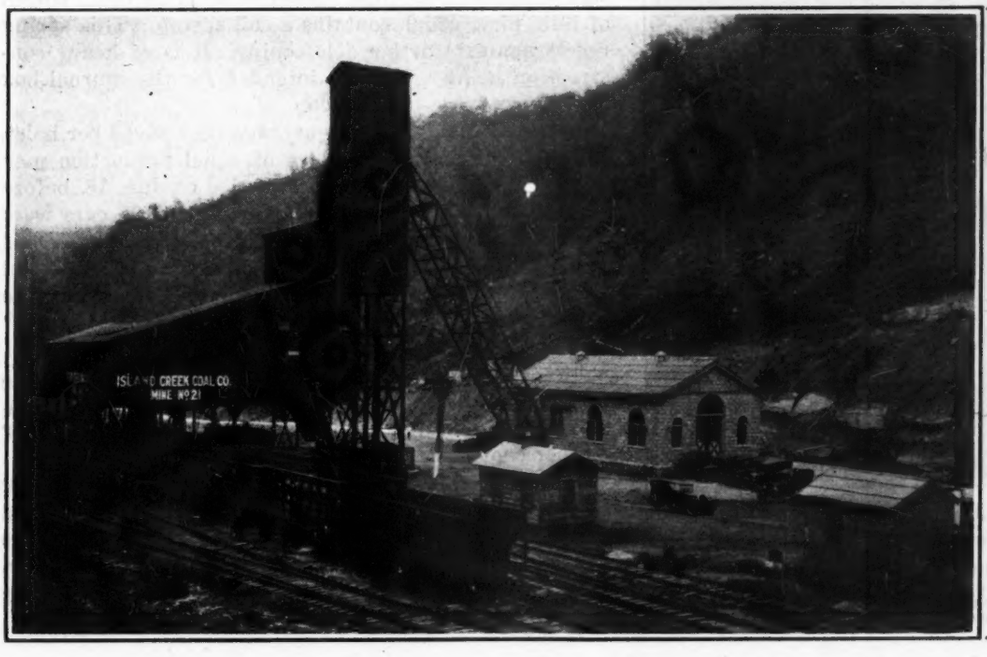
Mine No. 21 is selected as the example for describing the changes. The total lift in this shaft is 280 ft.; the weight of the self-dumping cage and loaded car is 21,000 lb., and the weight of coal per car is 5,900 lb. The hoist, which operates with cages in balance, has a cylindro-conical drum 7 to 10 ft. in diameter and is driven by a 475-hp. direct-current motor supplied with power from a flywheel motor-generator set and controlled by the well-known Ilgner-Ward Leonard system.

All of the necessary changes, five in number, were made on the cages and bottom equipment. The principal alteration was the addition of an extension to the bottom of the cage for opening the cager horns and releasing the loaded car when the cage in its downward travel passes a point 20 in. above the bottom landing.

A second change was to increase the grade by about 5 per cent for a few feet where the loaded car accelerates after being released by the descending cage. This was done by raising the main track rails at the joints next to the horns and evening out the joints by adding tapered fillers about 3 ft. in length to the tops of the cager rails.

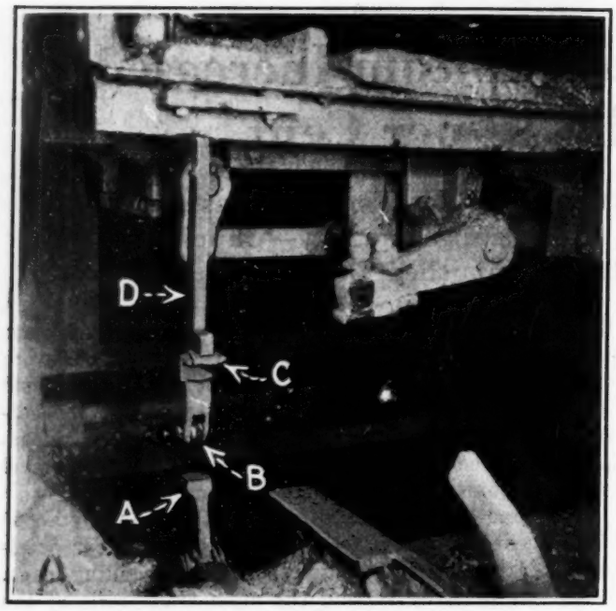
The earlier release and the steeper grade for acceleration allows the loaded car to gain a start by the time the cage lands. The signal for hoisting is given by the cager just as the empty car clears, and before the loaded one has moved far enough onto the cage to be locked by the horns. While the cage is starting upward, and until the car locks in position, which occurs when the cage is about 9 ft. from the bottom, the cager keeps his thumb on a push button ready to signal for an emergency stop.

Adding the 20-in. extension to the cage bottom entailed certain complications. The tripping dog in the sump has but a small throw, consequently, it was necessary to provide a means of disengaging the extension from the top of the dog after a few inches of cage travel. For this reason the extension is pivoted where it is attached to the cage and the end is fitted with a roller.



One of the Three Shaft Mines in the Logan Field

This mine, Island Creek No. 21, together with No. 20, were opened in 1923. They were planned for a production of 2,500 tons each per day but are now producing over 3,500 tons. The total lift at No. 21 is 280 ft. By a few minor changes to the caging equipment the average hoisting cycle was cut from 22.3 to 20.3 seconds.



Bottom of Cage Approaching Landing

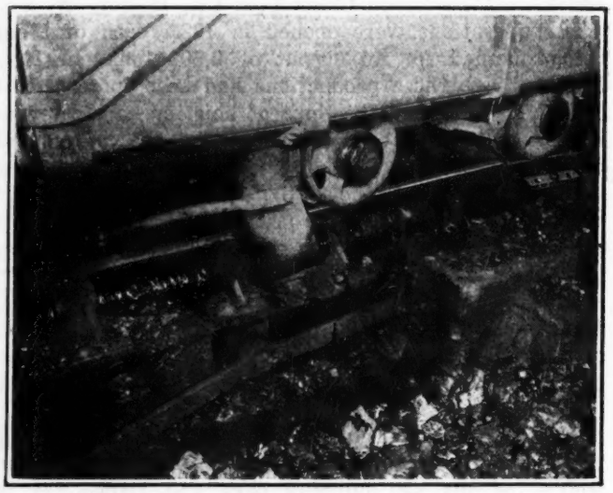
Roller "B" of extension "D" misses dog "A," but projection "C" lands upon it thus opening the horns of the cager. In the sump below "A" is a sloping cam that the roller encounters and which causes "D" to be swung toward the other end of the cage thus forcing projection "C" off of "A" before its limit of throw is reached.

This roller misses the dog in the sump but a block welded to the side of the extension lands squarely upon it. Almost at the same time that depression of the dog begins, the roller engages a sloping track or stationary cam which causes the extension to be swung toward the empty side of the shaft, thus pulling the block of the extension off from the dog.

This releasing of the dog before the cage proper lands upon it entailed another complication. In order to hold the horns open during the necessary time interval, extension pieces were fastened to each. These press against the sides of the moving car wheels and prevent inmediate closure of the horns.

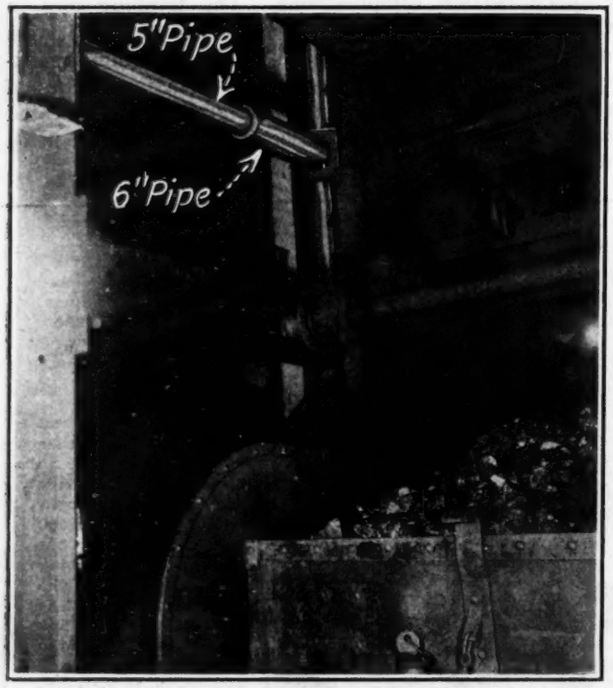
With these four changes made, the more rapid hoisting was given a trial. It was soon found, however, that trouble was developing with the guides at a point about 9 ft. from the bottom. The impact of the loaded car against the cage dogs or horns occurred at this point instead of when the cage was at the bottom. This was due to the earlier starting of the hoist.

The bolt holes at the first cross support of the wooden guides soon became worn and allowed considerable movement of the guides. If was decided that a slight movement would do no harm so a heavy coil-spring brace was placed between the guide and the steel column. This takes the shock and confines the guide movement to a satisfactory amount. The brace consists of a short piece of 5-in. pipe telescoped with an equal length of 6-in. pipe, which contains a coil spring. This spring reacts against further telescoping. It is of heavy construction being originally intended for the journal box of a heavy mine locomotive.



Extension on Horn of Automatic Cager

This rod encounters the car wheels and therefore prevents the horn from closing during a brief interval, or until the cage proper lands upon the operating dog. To provide a steeper grade for starting the car, the end of the main rail was blocked up and a tapered filler added to the top of the cager rail at the joint.



Brace from Wooden Guide to Steel Column

The 5-in. pipe butts against a heavy coil spring that is contained within the 6-in. pipe. This spring brace is located about 9 ft. from the bottom landing and is at the point reached by the ascending cage when the loaded car bumps against the cage dogs or horns. The spring absorbs the shock and prevents extreme bending of the guides.

In order to check up the average time saved per hoist, recorder charts for two days of equal production may be compared. Thus a chart recorded on Jan. 18, before the changes were made, indicates that 1,182 cars were hoisted in 439.5 minutes of actual hoisting time. This period was computed by subtracting from the total elapsed interval all delays of 30 sec. or over. The average hoisting time per car was 22.3 sec.

A chart of March 22, after the changes were made, shows 1,183 cars hoisted in 401 minutes, which is an average of 20.3 sec. per car. The speeding up of caging saved 38.5 minutes, in which time 114 more cars or 9.6 per cent more coal could have been hoisted.

Although this marked increase in capacity without major changes to the equipment was not accomplished entirely through the ingenuity of any one man, officials at the mine state that A. R. Beisel, the general manager, took a personal interest in the problem and was largely instrumental in its solution.

Random Notes on Coal and Its Mining*

By George H. Ashley
State Geologist, Harrisburg, Pa.

THE AUTHOR, for many years with the U. S. Geological Survey with duties on the Land Classification Board that took him all over the country, has endeavored to set down here the outstanding facts relating to coal and its mining. It is a well-established principle that those who use a superlative lay themselves open to correction. Mr. Ashley hopes this article will awaken correspondence that will correct any errors he may have made and thus supply the public with the superlatives they have been seeking. Some of his statements are, however, recitations of facts that even with new developments are not subject to revision, and these will stand without need for controversy.

IN PRESENTING comparative facts there is always a danger that some one will know of some more superlative example than has been presented. Therefore the statements contained in this article are offered not as a finality so much as a means of arriving at the true superlative facts. With this preface then, it may be said, that the largest coal mine in the world is perhaps the New Orient operation of Illinois with a capacity of 5½ million tons yearly. The deepest coal mine is probably the Produits Colliery in Mons, Belgium, which in 1901 was 3,937 ft. deep. The Pendleton colliery is the deepest in England. It was, in 1905, no less than 3,483 ft. deep and is now over 400 ft. deeper. The Haute Saone mine, the deepest in France, is 3,311 ft. deep. The Chemnitz, the deepest in Germany, is 3,117 ft. from the surface. The West Brookside, in the southern anthracite field, is the deepest, as far as I know, in the United States. N. N. Nichols, mining engineer, Glen Alden Coal Co., reports the Auchincloss shaft, No. 2, as 721.5 ft. above sea level and the deepest working place as 977 below the sea, making a total depth of 1,698.5 ft.

But how do these depths compare with those of other mines not producing coal? The St. John del Rey gold mine in Brazil is 6,726 ft.,† the Kolar gold mine in India, 6,140 ft. and the Tamarack No. 6 mine, in Michigan, which produces copper, 5,308 ft. deep. The deepest open-cut coal mining in the United States is in several openings near Hazleton, Pa., which are 300 ft. deep.

The thickest coal in the world is that at Norwell, in Victoria, Australia. Drilling reveals 780 ft. of brown coal in a total depth of 1,010 ft. of strata. It includes three beds, 266, 227 and 166 ft. thick. The main bed in the Fushun province of Manchuria is 130 to 230 ft. thick, and, if my memory serves me right, 430 ft. thick in one place. The thickest bed in the United States is the Mammoth in the Nesquehoning slope, No. 9, of the Lehigh Coal & Navigation Co., Carbon County, Pennsylvania, where it is 114 ft. thick, of which 105 ft. 8 in. is coal. The same bed near Shenandoah measures between 150 and 200 ft., but there it may have doubled on itself. The thickest bituminous coal bed found in the United States was until recently that in the Ham's Fork field of western Wyoming which contained 83 ft. of clear coal, but recently a bed 100 ft. thick was found in northeastern Wyoming. Thin beds have been found to be thickened locally by squeezing. At Rockwood, Tenn., a thin bed is thickened to 105 ft. In West Virginia the thickest coal is believed to be in the No. 5 Block seam on Coal River in Boone County. It is 25 ft. thick but quite dirty. The thinnest coal worked in that state is that mined by the Longdale Coal & Iron Co., being part of the Sewell bed. It is only 20 in. thick.

In Ohio the thickest coal mined is that in the New Straightsville district. The seam worked is the Middle Kittanning, which here is from 10 to 14 ft. thick. The thinnest coal mined in that state is in the Wellston district, Jackson County. It is the Quakertown bed and is only 2 ft. 4 in. thick.

In Pennsylvania the thickest bituminous coal found is at Carnegie, where the Pittsburgh bed is 16 ft. thick, filling an old channel. However, the Lower Freeport near Glen Campbell in Indiana County is also 16 ft. thick. The thickest area of the Pittsburgh bed is in the Elk Garden district of West Virginia, where it is over 24 ft. thick. It averages 16 ft. over a small area in the south end of the Georges Creek field of Maryland.

The thinnest coal mined commercially is at Lancaster, England. It lies at a depth of 900 ft., with other beds. It is only 8 in. thick, but being a cannel it sells at a high price. In Yorkshire, England, a bed 14 in. thick is mined at a depth of 1,200 ft. A Somersetshire mine goes 2,400 ft. to reach 22 to 26 in. of coal. Many mines in Great Britain and Belgium are operating in beds from 12 to 18 in. thick. Miners are trained from boyhood to work in these thin beds. The Lexington bed in Missouri yields a large output despite its thinness. It is from 14 in. to 2 ft. thick, with an average of 18 in. In Taylor, Page and Adams counties in Iowa, mines ship coal that comes from a

*From an address entitled "A Catechism of Interesting Facts About Coal" delivered at the Annual Banquet of the Coal Mining Institute of America, Pittsburgh, Pa., Dec. 8.

†Dr. T. T. Read, assistant secretary, American Institute of Mining and Metallurgical Engineers, says this figure should now be 7,026 ft.

Probably the Deepest Coal Mine in United States Is at Brookside

Brookside Breaker, Philadelphia & Reading Coal & Iron Co., a hillside structure, near Tower City, Pa. The coal at Auchincloss, shaft is about as deep being 1,698.5 below the collar of the shaft. If a tunnel were driven to the sea, the water would run in and fill the workings to the depth of about 1,000 ft. In such mines, it is most important to avoid doing what is so common in metal mines, letting the water find its way to the lowest point and lifting it all the way to the surface.

bed only 14 to 18 in. thick. A copper company in San Miguel County, New Mexico, mines coal for its own use from a bed 7 to 15 in. thick. A Benton County, Missouri, mine, is operating a 12-in. bed. It has an investment, however, of only about $2,500. These are the thinnest beds mined in the United States. The thinnest coal mined commercially in Pennsylvania is that at Gazzam No. 1 mine, in Clearfield County. This mine stops its rooms wherever the coal becomes less than 17 in. thick. Possibly certain clay mines in the Lower Kittanning coal in Beaver County, Pennsylvania, are mining thinner coal in connection with the extraction of clay. The crookedest bed in the world is probably the Sharon bed in Ohio, which in places is found to have been deposited in winding stream channels. The most restricted beds of coal mined in the United States are those in Missouri which are 150 to 300 ft. long and up to 80 ft. thick. They fill old sinkholes eroded in the limestone measures.

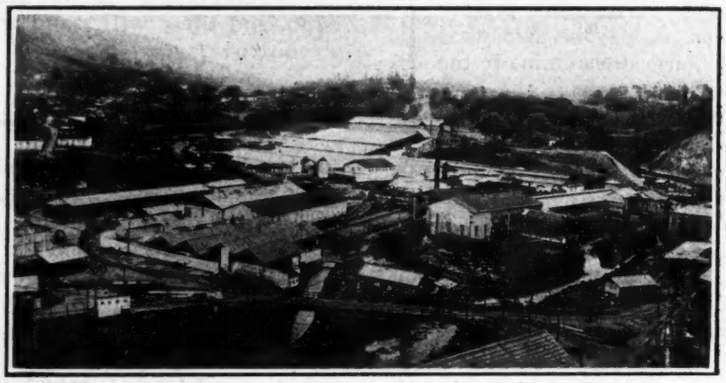
Anthracite and bituminous coal are produced in the same mine, from the same bed and at the same point in the Bernice field, Sullivan County, Pennsylvania. In the West, bituminous or sub-bituminous coals have been changed locally to anthracite by the near approach of molten igneous rock and in such places bituminous coal and anthracite come from the same mine.

Coal, lead and zinc are mined together in some of the pockets surrounding the main coal field in Missouri. They contain enough lead and zinc to make it profitable to concentrate the metallic contents before shipping the coal.

The states which, beside Pennsylvania, contain and mine anthracite are Rhode Island, Virginia, Arkansas, New Mexico, Colorado, with one territory, Alaska.

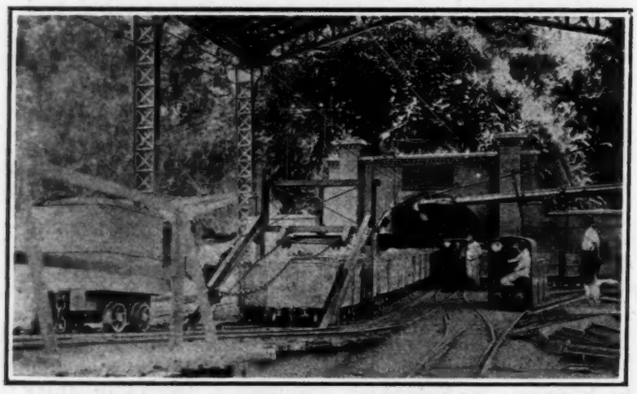
Two coals from Alaska are said to contain 71.3 and 81.3 per cent of volatile matter respectively, showing them to contain more gas than any other. The Torbane Hill coal, of Scotland, has only 71.1 per cent. The highest percentage of volatile found in any coal in the continental part of the United States is in that mined in Breckinridge, Ky. The coal is 62 per cent volatile. That coal also yields the most oil on distillation, 130 gal. to the ton. Scotch boghead cannel is a close second, producing 120 gal. per ton, which is not the only way in which Kentucky and Scotland have competed. The Breckinridge coal also produces gas of the highest candlepower. The gas that this coal gives off on distillation gives a light equal to 462 candles. The cannel of Boghead, Scotland, comes second with 42.6 candlepower, whereas other Scottish bogheads and Kentucky bogheads are tied at 38 candlepower. More northerly than any coal mine in the world is that on Spitzbergen, 500 miles north of the North Cape of Norway, which is the jumping off place for North Pole excursionists. In the United States, the most eastern mine it as Cranston, R. I., and the most western is at Coos Bay, Ore. None is further north than the Bellingham field in Washington state. Santo Tomas, near Laredo, Texas, has the most southerly mine.

The oldest working coal mine is probably one in the Fushun district of Manchuria, which is said to have been first worked 3,000 years ago to obtain coal for copper smelting. During the last 600 or 700 years, the



Concentration Works at St. John del Rey in Brazil

Here is the large plant for cooling the air by refrigeration that ventilates the workings, making the temperatures less oppressive than they otherwise would be to the workmen that labor therein.



Deepest Mine in the World

The St. John del Rey gold mine is 7,026 ft. deep from this level, not from the top of the hill. It doesn't look deep starting in, as it does, with a tunnel, but beyond it are many shafts and many horizontal tunnels, the ore being brought up in gigantic steps from the depths beneath. The bronze tablet on the portal is in honor of the engineer who advocated the continued working of the mines when everyone despaired of overcoming the stupendous difficulties of operation.

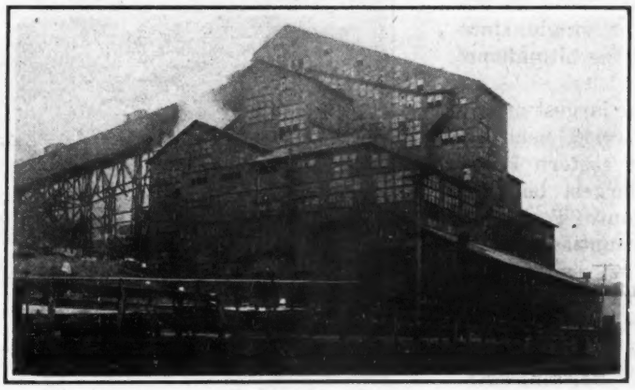
coal has been used for the burning of porcelain.*

The earliest historical record of coal is that of Theophrastus, 300 B.C., who says in his book on stones that coal is used by blacksmiths in Greece and Italy. The earliest mention of coal in England was that made by the Bishop of Durham, 1190 A.D. Coal was mined in Belgium about 1200 A.D. In 1239 A.D., Henry III granted a license to mine coal. Coal was first shipped to London in 1240. In 1306, the burning of coal in London was prohibited because of the smoke.

The first coal found of which the discovery is recorded in the area now known as the United States was that on the Illinois River in northeastern Illinois. The discoverer was Father Hennepin. He recorded his find in 1698. Coal was first mined in the United States in 1750, the property thus developed being in the Richmond basin of Virginia. In 1760 coal was mined at Fort Pitt in Pennsylvania and in 1768 in the Wyoming Valley of northeastern Pennsylvania, also at Portsmouth, R. I. The oldest coal mining company still operating in the United States is the Lehigh Coal & Navigation Co., which was established in 1818 and which absorbed the Lehigh Coal Co. which was founded in 1792. The first coal shipment in the United States was from the anthracite mines to Carlisle Barracks in 1775; from the Richmond basin in Virginia to northern cities in 1789; from Pittsburgh to Philadelphia in 1803 The first coal to be coked in Pennsylvania was made in Fayette County in 1816. It was coked in ricks. Coke was first made in a coke oven in Connellsville some time in the early thirties. The first pessimist to express fear of the exhaustion of coal was an Englishman. In 1552 England prohibited the exportation of coal, fearing an exhaustion of the beds. Apparently the fear was not well founded.

Open Cut, Fushun District of Manchuria

Coal was mined at Fushun, it is stated, 3,000 years ago, even before Theophrastus wrote about the "stones" that were burned by blacksmiths in Greece and Italy. It probably was originally stripped, but where the cover was at all deep it was afterwards mined by underground methods. When the Japanese learned about the deep strippings in the United States and Germany they started big open-cut workings. In one place the coal is said to be 430 ft. thick.

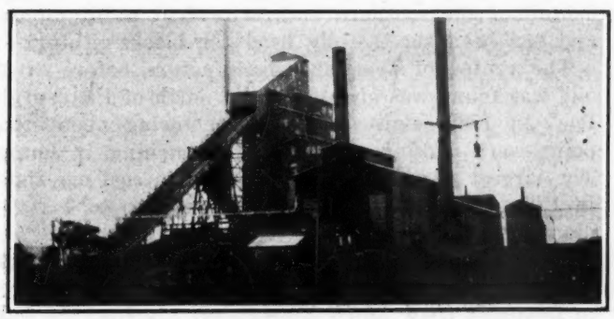


Nesquehoning Breaker, Lehigh Coal & Navigation Co., Carbon County, Pennsylvania

The Mammoth bed in the Nesquehoning No. 9 slope is 114 ft. thick. Of this, 105 ft. 8 in. are coal. This is not a result of a doubling of the bed but its natural thickness. The extraction of such a thick bed brings problems not experienced where the coal is thinner. The coal from the slope mentioned goes to the Coaldale Breaker for preparation.

The first mining law was passed in Pennsylvania in 1803. It restrained waste in quarrying and mining. In 1848 a law was passed providing for the mining of coal and other materials from the river beds of the state. This law was repealed in 1849 but was restored in certain counties during the fifties and sixties. The first law regulating the mining of coal in Pennsylvania and establishing an inspection system was passed April 12, 1869. It applied only to anthracite mines. The first bituminous law was passed April 18, 1877. The First Geological Survey was established in Pennsylvania under a law signed March 29, 1836, the Second was established in 1874, the Third in 1899, and the present Survey in 1919.

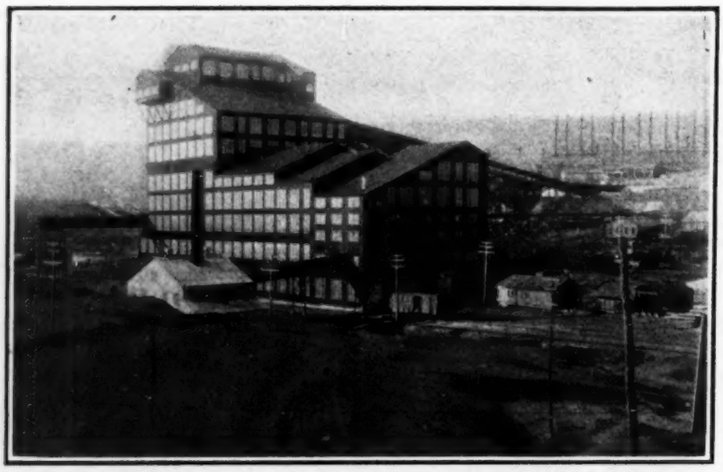
The largest quantity of coal in a single continuous



America's Easternmost Coal Plant

Few have heard of the Rhode Island anthracites or superanthracites as Mr. Campbell terms them, which are extremely dense and free from volatile combustible matter but have enough carbon to make it certain that when burned they will give much heat. At Providence they are now being processed to render them more readily combustible. This is the plant at Plymouth, R. I.

*According to the brochure "Fushun Coal," issued by the South Manchuria Ry. Co., "The coal in the Fushun district was first worked by Koreans some 600 years ago, the coal being used in the baking of earthenware. After the occupation by the Chinese, which took place 200 years ago, mining was entirely prohibited by the Chinese government as Fushun is located in the vicinity of a suburb of Mukden which contains the mausoleum of Tai-tsu, an emperor of the Manchu dynasty. During the Russo-Japanese war the mines were worked on a small scale by Russians, but not until 1907, when the property was transferred to the South Manchuria Ry. Co., was mining undertaken on a large scale." The coal is used extensively by the railroad, for the operation of blast furnaces and for heating.



Lansford Breaker Also Prepares Coal from Mammoth Bed

Another of the Lehigh Coal & Navigation Co.'s preparation plants and one of the most recent. It adjoins the Nesquehoning Breaker on the West. It typifies the better lighted and more carefully constructed breakers of more recent years. Note the silt bed in the foreground. The waste of the modern breaker is small indeed in quantity and size as compared with the waste of earlier years.

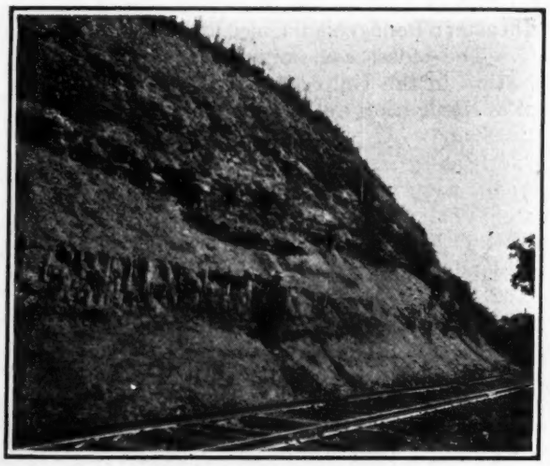
area is the Fort Union coal territory of Montana, Wyoming and the Dakotas. It contains about 1,200 billion tons. The single bed of coal having the largest tonnage in the United States, if not in the world, is the No. 6 bed of Illinois and Indiana, which is equivalent to the No. 10 bed in Kentucky. In Illinois alone this bed contains 56 billion tons of coal. With an 80-per-cent recovery that single bed in a single state contains as much recoverable coal as all the bituminous coal beds in Pennsylvania combined.

The Pittsburgh coal bed has yielded the largest money return of any mineral deposit in the world, nearly 5 billion dollars. The Mammoth bed, of eastern Pennsylvania, probably ranks next. The largest body of cannel coal is probably that near Santo Tomas in Texas, which covers parts of three counties with a fairly uniform thickness. It must be remembered that cannel-coal deposits are usually lenticular.

The United States has approximately one-half the coal of the whole world. Canada comes second; China, third; Old Germany, fourth, and Great Britain, fifth. Pennsylvania produces one-fifth of the whole production of the world, the rest of the United States another fifth, England and Germany each a fifth and the rest of the world the other fifth. The production of bituminous coal in the United States first exceeded the production of anthracite in 1870.

The state having the most coal of any in the United States is Wyoming and that having the most bituminous coal is Illinois. Greene County has the most coal of any in Pennsylvania, its recoverable fuel being 7 billion tons. Washington County comes next with 5½ billion. Pennsylvania ranks ninth among the states in its recoverable coal.

The highest coal royalty paid in the United States is that levied by the Girard Estate in the anthracite region—$1.50 a ton. The highest priced coal land contains the Pittsburgh bed and is in the Connellsville and Klondike basins. It is said to have brought $3,000 an acre. Coal is produced by placer mining in all the large streams draining from the anthracite region. The yield is over one million tons yearly. Raw bituminous coal from the



Outcrop of the Pittsburgh Bed

Greatest wealth-producing mineral deposit in the world. It spreads throughout western Pennsylvania, eastern Ohio, western Maryland and northern West Virginia and being a fine gas and steam coal commands a large royalty and high acreage price.

One of the Oldest Coal Openings in the United States

A mine in Cannelton, Beaver County, which was opened in 1787 and has been mined intermittently almost up to the present. It has remained true to its pristine simplicity; 140 years, almost without change, it has watched the world go by.

Sharon bed in northwestern Pennsylvania and northeastern Ohio has been used in blast furnaces. The Brazil block coal of Indiana and the block and splint coals in other sections have been used for the same purpose. The coal at the western end of the southern fishtail of the southern anthracite field is bituminous and has been successfully used for blacksmithing.

The center of "coal-oil" manufacture before "rock oil" was found was about 25 miles north of Pittsburgh, Pa. In 1860, eight companies centering about that point were making "coal oil" for burning in lamps. The largest pyrite concretions found in coal are those in Pike County, Indiana, which range up to 7 ft. in diameter.

No coal is found in the older geologic rocks because coal is made of land plants, the first of which appeared in Devonian time, which immediately preceded the Carboniferous Age in which we find the first coal beds. The youngest coal being mined is the lignite produced near Florence, Italy, which is of Middle Glacial Age. The plants from which it is derived must have been con-

temporaneous with early man. The oldest coal being mined in the United States is probably that in central Virginia, the seam being found in the Pocono sandstone or basal Lower Carboniferous measures.

It would take not less than 3,000 years at the present rate of plant growth to lay down a 10-ft. bed of coal, if there was no loss and if the maximum growth was maintained during the whole period.

If all the coal mined in Pennsylvania in one year were loaded on a train at one time, it would be 40,000 miles long, reaching more than twice around the globe at this latitude or more than 1½ times round the globe at the equator. The gold and silver mines of the United States and of the territory of Alaska would have to work for twenty years to buy one year's output of the coal of the United States. The coal mined in this country in 1918, 1920 and 1923 added together had a value of $6,412,000,000, almost equal to the value of all the gold and silver mined in the United States and Alaska from the beginning of those industries, or $6,498,000,000. The highest conical coal mine waste pile in the United States is that at Jeanesville, near Hazleton, which is about 300 ft. high.

Men and Women of the Mines
IX—The Miner's Castle

By H. S. Geismer
Birmingham, Ala.

The two quotations following are taken from a recent book of collected editorials by Arthur Brisbane. The *Cosmopolitan* offers the book as a premium to any one who sends in a two years' subscription to the magazine.

(1) "The pet scheme of mine owners against which the unions had to fight was TO KEEP THE MEN ALWAYS IN Debt to the Company's Store. As long as they were in debt they were helpless. They could not move away. They dared not complain, they had to take what was given them."—Page 72.

(2) "Lucky the man who is driven. He should be grateful to the whip of NECESSITY or any other force that drives him on. The Driven man moves, goes forward, gets somewhere. Ninety-nine per cent of us work at our best Only when driven. Necessity is our best friend."—Page 77. (The capitals are Brisbane's.)

Number one was undoubtedly based on hearsay evidence. It is the only editorial in the book that concerns itself with miners. Number two is a typical Brisbane editorial. According to number two the company store described in number one is deserving of a hymn of praise!

But getting back to the helpless miners, in debt to the store, who dared not complain and could not move away.

Back in the old days when miners were allowed to get into debt at the company stores they compared notes as they went along and when enough of them got into debt to make the grand total of their indebtedness worth noticing they called a strike and went on vacation. They had as a rule at the beginning of the vacation no money in savings accounts and at most only a few dollars due on the company pay roll. Yet in spite of that they would remain idle for months at a time, with only a small ration allowance from the union to fall back on, and live through it. They would even be willing to try it again the following year.

As the strike dragged along, the company, previously favored with the strikers' labor, would call attention to the fact that it was in need of its houses; no response. Then would come an offer from the company to transport any miner's household effects to any nearby city without hauling expense; no response. Then would come a threat to institute ouster proceedings; still no response. Then would follow ouster proceedings. At last things would begin to move in the camp—but no one made preparation to move out of the houses. Newspaper reporters and photographers seemed to spring up from everywhere and the dailies published in nearby cities gave their stories and photographs right-of-way on the front pages and all of the headlines were reserved for them.

If the mine operators thus suddenly thrust into the limelight happened to possess sufficient backbone to enable them to stand by their guns (not literally speaking, of course) in the face of all the vituperation heaped upon them, they eventually got back their houses. But in most cases by that time the strike was over and they got back the original tenants (still in possession) with them.

The mine operators have learned that if a man goes on strike, indebted to the company and then returns to work after the strike has been called off, he will not consent to have the unpaid account reinstated. He will vacate his house and take his family out of camp before he will submit to it. For that reason mine officials are extremely careful now not to let miners get in debt at the commissaries. To drive a miner out after he had refused successfully for months to be driven out would indeed be humiliating.

Gasoline Admixture, Not Heat Effect, Causes Oil to "Thin Out"

It is well known that engine oil loses its body after it has been used for a time. This change is sometimes referred to as breaking down, says G. S. Hamilton of the Climax Engineering Co., Clinton, Ia. Oil does not break down, or undergo any permanent thinning out, when heated.

A mixture of oil and gasoline is naturally thinner than new oil and this is the material in the crankcase when the oil is said to have "thinned out." Unvaporized gasoline in the cylinders leaks past the pistons and mixes with the oil in the crankcase. Whenever there is an excess of liquid fuel in the cylinders this is bound to happen.

Although thin oil might give fair lubrication under ideal conditions, new oil will hold the moving parts out of contact much better. To prevent engine wear it is necessary to sufficiently separate the moving parts so that the particles of dust and other abrasives that are carried in the oil film will not touch the metal surfaces and cut them. The extent to which this dust and abrasive material is drawn in with the air through the carburetor varies with operating conditions.

For the longest engine wear the oil should not be allowed to thin out too much and abrasives should not be permitted to accumulate. If oil is changed at proper intervals (at least once for every 50 hr. of service) the abrasives, under ordinary conditions, will not accumulate to an extent that will cause damage. With this protection the engine will give many times the service that would otherwise be possible.

Mine Shaft Destroyed by Cave-In

On Jan. 14, of this year a cave-in destroyed the shaft of the Bloomfield No. 5 mine of the Bloomfield Coal & Mining Co., located about 7 miles north of Des Moines, Iowa, on the Chicago & Northwestern R.R. This shaft, sunk in 1913, was 264 ft. deep. For several years the mine produced coal at the rate of 700 tons per day.

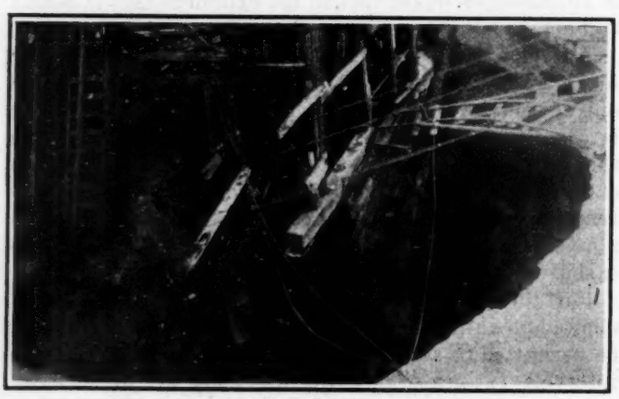
In Danger of Falling

This is not the famous "Leaning Tower of Pisa" although it somewhat resembles it in inclination. At the time this picture was taken the headframe and dumphouse had sunk approximately 8 ft. and the tower was leaning almost to the point of toppling over. The edge of the cave had moved practically to the foundation of the hoist house at the left. George Yarn, president and chief owner of the company, states that although if this accident had not occurred the mine might have been operated for several years, yet so much coal had been taken out that it will not pay to sink a new shaft to these old workings.

The bed worked varies from 36 to 60 in. in thickness.

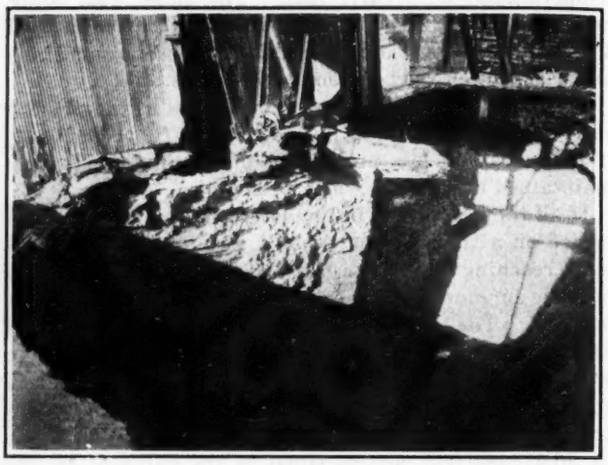
About 50 ft. below the surface the main shaft passed through a 15-ft. bed or pocket of quicksand. A steel shoe was used in driving the shaft from the surface to a point in hard clay a few feet below this sand and the opening was concreted from this shoe to the surface. The remainder of the shaft was wood lined.

On the day of the cave-in the mine was shut down. One man was in the shaft arranging some cleats which were to be used to support a platform to be used in repairing the shaft lining just below the concrete. While engaged in this work he noticed the lining begin to fail and immediately signalled to be hoisted. It was well that he acted promptly, for no sooner had he landed at the top than the falling material in the shaft forced



Opening Around Shaft Head

This shows the pit that yawns around the concrete shaft lining, about 20 ft. of which is exposed. The hole around the shaft was 50 ft. in diameter and 25 ft. deep when this photograph was taken from the top of the hoist house.

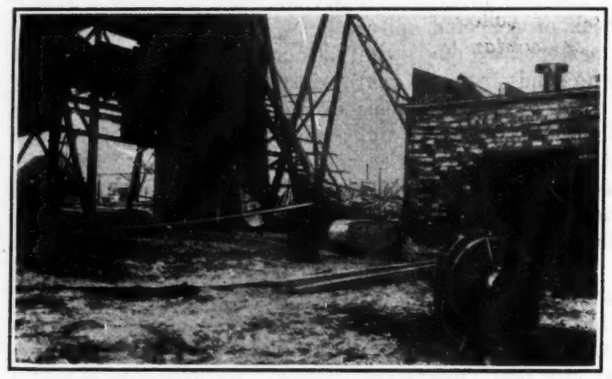


Another View of the Pit

At the upper right is the wall of the hoist house the foundation of which is being undermined by the cave. Electrical equipment in the mine at the time of the accident consisted of a fairly new 6-ton locomotive and four longwall mining machines. There is small chance that these can be recovered through the air shaft.

the lower cage to the bottom thereby pulling the upper one to the extreme limit of its travel.

Only one man was in the underground workings at the time. He happened to be near the air shaft and escaped unharmed up the stairway. The photographs accompanying this brief description were made on Jan. 16, while the shaft was still caving.



Salvaging the Electrical Equipment

The hoist and substation equipment are here shown being moved to safety. The hoist motor is seen in the foreground. The hoist itself had not been moved when this picture was taken and it was somewhat questionable if it could be gotten out in time to save it from sliding into the cave.

WE HEAR of irregularity of operation in the coal industry. I suppose that is because some theorists argue that a coal mine should operate six days per week. However, few people believe they should buy their coal in the summer or carry sizable stocks. I wonder where and by whom they think the coal would be stored were the mines to operate regardless of seasonal demand and why it is that they do not suggest that consumers be compelled by law to stabilize their buying habits. Regularity of operation is bound to be affected by seasonal demand and not until the manufacturing and transportation industries, which consume more than two-thirds of the product of bituminous mines, become disposed to equalize their coal purchases with the passing of the months, will this condition be remedied.—*Harry L. Gandy, before Cincinnati Chamber of Commerce.*

What Makes Coal Pillars Heat and Burn

By James Cooper
Assistant Professor of Mining, Heriot-Watt College, Edinburgh, Scotland

British operators, though mining practically no lignites or subbituminous coals, nevertheless have trouble with spontaneous combustion under deep cover and at the outcrop. James Cooper explains some of the causes for such fires

ONE of the most intriguing problems that falls to the lot of the mining engineer is that of self-ignition of coal. Spontaneous combustion occurs with certain coals in all the three-fold operations preliminary to their use—in excavating, transporting and storage—and at present no satisfactory solution of the difficulties arising from the phenomena of self-ignition has been found.

For long centuries this property of coal has claimed attention, and one of the earliest records is from a Scottish coal field. In the year 1666, David, Earl of Wemyss, mentions a spontaneous fire that occurred in a small pillar-and-stall (room-and-pillar) district. The seam mentioned is the "Dysart Main," a bed of coal 18 to 21 ft. thick without partings. It is still worked and peculiarly liable to spontaneous heating and ignition.

Another interesting and early record is that of Dr. Plot in his "Natural History of Staffordshire, 1686." In this book he mentions instances in which fires started spontaneously in the outcrops of the "Staffordshire Thick Coal." This bed, which in some places attains a thickness of 30 ft., still exhibits in this Midland coal field the same propensity and causes much managerial worry and economic loss.

Self-ignition of seams is confined to what are termed "thick beds" and throughout the British coal fields are seams liable to this phenomenon. Some are well-known offenders, as, for instance, the Dysart Main and Lochgelly Splint in the Scottish area, and several seams in the Midlands and Yorkshire field of England. Generally, the beds where fires occur consist of two or more layers of coal interspersed with bands of fireclay, inferior coals and other soft material. Until quite recently, spontaneous ignition was associated solely with bituminous coals, but two well-authenticated cases have been recorded in the anthracite region of South Wales. In both cases, one in the Brass, the other in the Stanllyd seam, the strata had abnormal structure, the beds being thicker than usual.

Fig. 1—Lochgelly Splint Coal

From Raith Colliery, Scotland. Hard "blaes" or "blaize" is a hard sandstone free from joints, and "soft blaes" is a soft shale or slate of bluish color. "Parrot coal" is a variety of cannel, so called because when on fire it splits and cracks with a chattering noise. This seam spontaneously ignites.

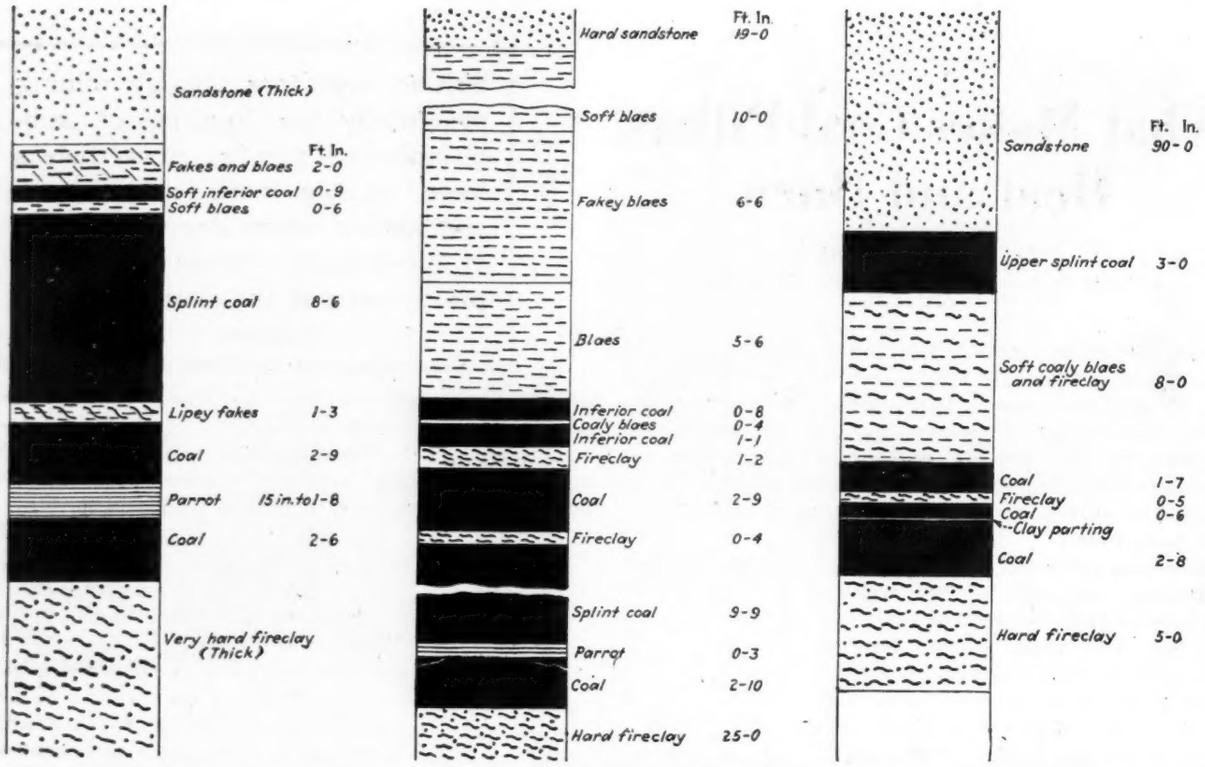
Though in Great Britain the firing of coal underground occupies more of the attention of the mining engineer than this property above ground, nevertheless serious loss and danger may result from the self-ignition of coal during transportation and storage. Coal transported in ship's holds is liable to self-ignition which sometimes occurs with disastrous consequences. Storage piles or "bings," as they are termed, also fire frequently, and certain precautionary measures have to be taken to minimize the risk.

During a recent investigation in the Scottish coal field I made a record of many such occurrences and found that: (1) In bings of mine-run coal, the addition of fine cuttings or "holings" from coal cutters increases the liability to fire. (2) Fires and heatings have a greater tendency to occur after wet weather. (3) Heating appears to take place about a zone near the top of the mass, where the moisture, permeation of air and the insulation of the heat produced have raised the temperature to the critical point.

Piles of washery refuse, known as "dross bings" in British mining practice, should not be more than 20 ft. deep. Access to the center of both mine-run coal and refuse coal heaps is made by means of pipes of 3-in. diameter and 15 ft. to 20 ft. long driven vertically into the mass with regular spacing. Daily readings of temperatures are recorded by thermometers passed down these pipes by a string. Whenever the thermometer registers 80 to 90 deg. F. the area about the pipe is excavated, for a rapid rise of temperature is sure to follow. "Redd bings," that is piles of waste brought direct from the mine, and also the cleanings of shaft sumps which are likely to contain oil, fine coal and timber often readily ignite. Material of this kind dumped on a "redd-hill" should be kept under observation lest it ignite.

Despite the wealth of information gathered and the many papers published on the still unsolved problem of self-heating of certain coal seams, no definite agency can be determined. I have visited many collieries in the Scottish area and prepared several sections of such seams as were found to be liable to spontaneous combustion.

Figs. 1 and 4 show the Lochgelly splint seam in the Fifeshire coal field, and Figs. 5 and 7 are from the south Ayrshire district. The sections shown have all several layers of coal in the seam and have another



Figs. 2, 3, and 4—Sections of the Lochgelly Coal Seam That Is Subject to Self Ignition

Section taken at Donibristle Colliery in Fifeshire. "Fakes" or "faikes" is a sandy shale which splits readily. "Lipey" means "lumpy." Pillars in upper split may fire. No trouble in lower split, though excavated by aid of mechanical coal cutters. Old pillars in past have, however, fired.

This was taken at Mossbeath Colliery, Fifeshire. This is a first-class household coal and fires actively. Stoppings in shaft-pillar built in this colliery to prevent fires are shown in Fig. 8. Note change in seam 300 ft. away. This is a soft coal lying between a hard roof and floor.

Taken at Lindsay Colliery in Fifeshire. Workings badly crushed, but no fires, perhaps because of thick bed of soft coaly blaes and fireclay, 8 ft. thick lying between upper and lower splits of the coal bed which probably weakens under pressure and lessens the crush on the coal.

common property—a strong, thick bed for roof and floor. These two strong members when the coal is excavated and subsidence occurs crush and grind the soft beds like a pair of iron jaws, and much fine material is produced. This ingredient, as shown in bings at the surface appears to be a predominating factor in oxidation and consequent heat initiation.

In some of those thick seams the heatings and ignition have occurred in roadside pillars, in opening out from the pillar at the shaft bottom, on the corners of pillars in pillar-and-stall workings and in the gob of longwall workings.

FACTORS IN SPONTANEOUS HEATING

Though a full detailed description of the past and present conditions and methods of working the seams shown in the sections is beyond the scope of this article, several factors appear to determine the degree to which any given coal will be liable to spontaneous heating. Three-quarters of a century ago the seam shown in No. 1 section, and which I described at a Pennsylvania mining institute meeting nearly 20 years ago, was worked by pillar-and-stall. The workings subsequently firing, the area was sealed off. The present workings have been opened out on the longwall method, the lower seam worked advancing and the Splint retreating, using the same roadways.

The seam is fairly damp throughout, and in most places is interspersed with small faults. Where the fires originate the coal is under a cover of from 100 to 500 ft. The heating apparently occurs at the bands of inferior coal and fireclay. High temperature may develop in a fall of these upper strata. The precautions taken during the present operations are: (1) To prevent crush by opening out only a small area; (2) to have ample support about faults; and (3) to prevent air-breathing by solidly building up and packing the sides of all roads. There have been no instances of the lower coal heating, this action being confined to the soft beds above the splint coal.

The section shown as No. 2 has had different treatment, as the upper, or Splint, bed, being of much superior quality to the lower coal, the former was worked successfully over a large area by the pillar-and-stall method. In the subsequent pillar extraction, numerous heatings and fires occurred, and several small areas were sealed off. In the present workings, the lower seam is excavated by coal cutters, and no trouble is experienced except under old pillars of the upper bed, where heating may occur.

The Mossbeath seam, shown in Fig. 3, is an interesting example of a bed of coal subject to violently active spontaneous firing. Twenty-four years ago this seam of first-class household quality was opened out and a small area worked. The lower 6 to 7 ft. was first advanced by pillar-and-stall, and pillar extraction was attempted in a small district, the upper part of the seam being dropped on the retreat. A serious fire almost immediately occurred, and stoppings were built in the shaft pillar roadways, sealing the entire seam.

This coal seam comprises a large thickness of soft beds lying between thick, hard roof and floor strata, at a steep gradient of 1 in 2. The coal is friable in places, and when it crushes, huge masses slide from the bed.

The strata are naturally damp, the inferior coals and fireclays particularly, containing about 12 per cent of moisture.

Recently the stoppings were removed in the shaft pillar roadways and levels advanced supported by circular girders and brickwork to prevent side-slipping and oxidation. After a few weeks a small hole was encountered in an old roadway, and a day later smoke appeared issuing from the fallen material. Stoppings have again been built in the shaft-pillar roads, Fig. 8 showing the construction followed in each of the two roadways. An interesting feature is the great variation of strata as shown in Figs. 3 and 8, these being measured only 300 ft. apart.

In this instance, the ignition appears to be about on the edge of the shaft pillar, and a high temperature is maintained at the stopping situated 150 ft. back towards the shaft. A large area of ground was excavated because the crushed coal permitted the passage of smoke. While removing the inferior coals shown and while the material excavated still lay heaped on the roadway during the building of the walls, the material actually fired though the length of exposure was only 36 hr. There was nothing that could be done except to dispatch it as quickly as possible up the shaft to the redd-heap.

The section shown in Fig. 4 is of the same seam in another district of this coal field. Although the workings are badly crushed, no fires or heatings have been found, probably due to the thick stratum between the upper and lower coals and also to the absence of bands of inferior coal.

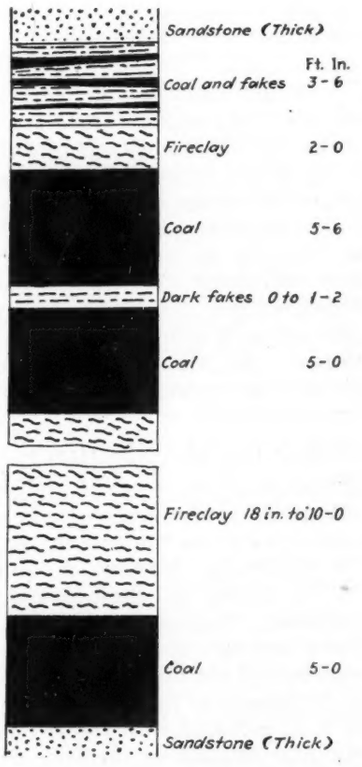
Figs. 5 to 7 have been taken from the south Ayrshire field about 100 miles west of the Fifeshire district. The three beds shown in Fig. 5 are in parts of the mine almost contiguous and are worked longwall, the lowest coal stratum first. The method adopted is to drive the main roadways to the rise and dip, with levels branching off. From these levels the face roads are set away to the rise. The second or middle bed is now worked at right angles to the workings in the excavated lower stratum, and the upper top coal worked retreating with the roadways of the middle layer.

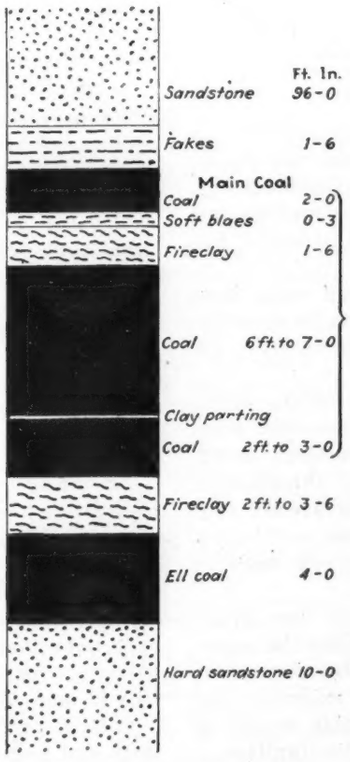
Heatings and fires occur; I have observed one in the central coal. Crush is pronounced in the workings, but there is one curious feature of the heatings and fires: they occur only in those areas where the fireclay (shown) is from 18 in. to 4 ft. thick, and no instance of self-ignition has been found in places where the stratum runs from 4 ft. to 10 ft.

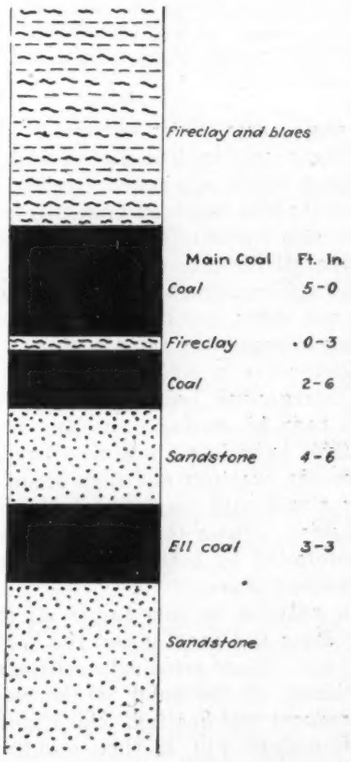
Fig. 6 from the Maxwell Colliery also shows a three-layer seam liable to spontaneous heating. An outcrop fire has existed at this mine for many years, but although heatings and fires have occurred underground no serious trouble has resulted.

Fig. 7 shows the same coal seams at a neighboring mine. Here, apparently, they are immune from spontaneous combustion, probably because of the strong band of sandstone that separates them. The conditions here are similar to those of the Lindsay section, Fig. 4, and here also heatings or fires do not occur.

Though many factors may be cited as influencing the initiatory self-heating of coal, embracing all qualities of the mineral, it is obvious that ignition takes place







Figs. 5, 6 and 7—Cross-Sections of Ell and Main Coal Beds, South Ayrshire Field, Scotland

Taken from Houldsworth Colliery. Worked longwall, lowest layer first. Coal heats and fires where parting is over 4 ft. thick. Workings are badly crushed. Middle bed worked at right angles to lower and top coal brought back in retreat.

From Maxwell Colliery. Mine is near Killochan Colliery, the beds of coal at which are shown in cross-section on right as Fig. 7. A three-layer coal subject to spontaneous heating. Mine has had outcrop fire for many years but no serious trouble.

From Killochan Colliery. Seam is apparently immune from spontaneous combustion, perhaps because strong bed of sand stone separates the coals. Note a most unusual condition at this mine. The fireclay is in the roof and the sandstone in the floor.

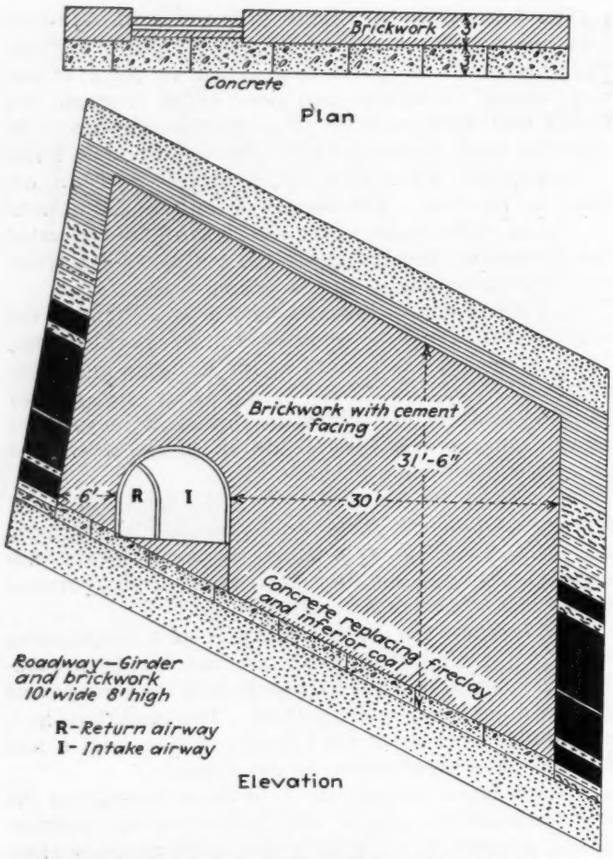


Fig. 8—Stopping to Subdue Fire at Shaft Bottom

This is at the Mossbeath Colliery. The section 300 ft. away is shown in Fig. 3. Coal lies on gradient of 1 in. 2. After a long time, stoppings were removed till a small hole was found where smoke issued from fallen material. The stoppings had to be re-erected, and about 150 ft. of this construction still has high temperature.

in some cases under extremely simple conditions. A spontaneously ignited fire in a ship's hold may be instanced which originated directly under the hatchway. Here the coal had been broken into fines by loading, and here also currents of air and tricklings of water had comparatively easy access.

In surface bings, whether of mine-run coal, dross or redd-heaps, any fine material appears to be an active agent in promoting self-ignition as air and moisture are concomitants in aiding combustion.

Underground, because of the crushing of the softer coal beds by strong roofs and floors, the coaly mass is likely to be in a fine state. In all the sections shown, wherever heatings and fires occur a great thickness of soft strata may be found lying between a hard roof and floor. Under the pressures and thrusts to which it is subjected by both roof and floor, the coal becomes a crushed mass.

In addition to this factor all the seams are naturally damp and opening out the beds provides the necessary air. Three principal conditions are therefore found combined, all favorable to the work of oxidation and consequent self-heating, which with suitable insulating surroundings will, in time, result in active ignition.

On the other hand, given almost similar conditions, namely those in Figs. 4, 5, and 7, where the fireclay is thick and hardened, what is in effect two thin seams are formed, thus rendering the coal immune from self-heating. The resisting action of the hard stratum midway prevents their being ground in both a vertical and lateral direction, as is the condition with thicker seams.

Any method of extracting the mineral in thick seams that would tend to avoid the production of fine material would probably limit the liability of those beds to spontaneous combustion.

Dust-Catchers for Pneumatic Tools Will Prevent Much Disease

In a lecture entitled "Industrial Dusts," recently delivered at the Carnegie Institute of Technology in Pittsburgh, Dr. Edgar L. Collis, Professor of Preventive Medicine at the University of Wales, declared that the principal hazard in mining at the present time arises from the use of pneumatic tools, such as jack-hammers. Fortunately, devices for catching the dust formed in this manner are now available. Working on the ejector principle, the air escaping from the drills is used to actuate an exhaust current of air which draws the dust away and carries it to a flannel bag filter. When this device is generally adopted, pneumatic tools should be entirely safe and much of the silica-dust hazard be removed from the mining industry.

Dr. Collis claims that dusts differ in their effects on the human lungs and states that, for the most part, those of animal origin are fairly harmless. This is also true of most vegetable dusts such as coal and flour, but vegetable husks from cotton and flax set up a tendency to bronchitis and pneumonia as well as to spasmodic asthma. Dusts composed of materials found in the human body and soluble in the body juices seldom cause trouble. However, dusts such as carborundum, emery and glass which are insoluble in the body cause bronchitis if the particles are large, and pneumonia if they are small.

Silica dust, arising from flint, quartzite, metalliferous rocks, sandstones and granites, belongs in a special class. Not only is it capable of developing bronchitis or pneumonia, but it also slowly dissolves in the lungs and changes them from elastic spongy organs into tough rubber-like material. Experiments have shown that tubercle bacilli readily multiply in tissues damaged by silica but not by other materials. Experiments also conclusively prove that silica dust exerts its harmful influence by passing into solution and chemically reacting upon the lung tissues. For this reason, workers exposed to silica dusts fall ready victims to tuberculosis.

Making Life Safer for the Shotfirer

According to the Bureau of Mines, there is probably no man engaged in the production of coal who is exposed to so much danger during his work as the shotfirer. Seven types of single-shot blasting machines have been approved by the bureau and these should be of interest to every shotfirer. Magneto machines have been redesigned so that a spark from the machine will not ignite gas. All unapproved machines tested by the bureau were found to be dangerous in this respect.

Battery outfits have been provided with covered contacts and both contacts must be made at the same time by the use of a plug. This prevents accidents if the wires unexpectedly touch uncovered or bare battery terminals before the shotfirer is ready to fire the shot. A good grade of rubber-insulated wire is required for use with the approved machine. This, too, means greater safety for the shotfirer.

Europe to Adopt American Methods Despite Her Ostensible Repugnance To Them, Geneva Observer Predicts

By Edward J. Mehren

Vice-President and Editorial Director, McGraw-Hill Publishing Company, Inc.

Geneva, May 16—While the committees of the International Economic Conference continue their efforts to agree on resolutions there is time for those who do not labor by day and night to adjust divergences to lean back and reflect on the conference. Toward the end of this week the plenary sessions will be resumed and reflection will give way to high mental agility to keep up with the public discussion.

Especial interest for Americans attached to the presentation of our ideas to the conference.

A feature of the conference is the amount of attention the United States has received. We have not, through our own delegates, invited it or forced it. Europe has taken the initiative. She is keenly aware of what we have accomplished industrially and to some extent she understands our mechanism. But the English, the French, the Italians and others say that our methods are not applicable in Europe; the Germans do not say so; they are applying them.

Of course, when speakers make such generalizations they probably take liberties with their own judgments, for, in reality, they are thinking hardest about their particular national conditions. Again they might admit, on being quizzed, that they would apply certain of our methods but not others. But they spread themselves over a large territory when they generalize for Europe.

Mr. Robinson Replies

To their generalizations, the head of the American delegation, Henry M. Robinson, replies that, at least, European countries, could adopt our waste elimination program and, abandoning their traditional industrial secrecy, freely interchange information regarding technical methods, research, trade practices, etc. He admits that, with unemployment large, energetic substitution of machinery for hand labor might not now be possible but he so put the point as to indicate that mechanization was fundamental to Europe's trade and industrial recovery.

Commenting on our much discussed industrial efficiency several delegates denied us perfection by pointing out—and justly, too—our prodigal waste in raw materials (a waste now happily disappearing).

Also, the Europeans believe that in America our tastes are standardized. They contend that mass production in Europe is not possible because the Europeans are individualists and demand articles that have individuality. What a fine chance for debate! Undoubtedly we often sacrifice taste to price and take an article of indifferent appeal because it costs less. But do even the Europeans need variety in pots and pans and stoves and faucets and what not? And have we killed style and eliminated taste entirely? Let each reader make his own answer. The European judgment probably will not be his.

All in all, despite their protests, it is my belief that all the protesting delegations will go home more determined than ever that, as rapidly as they can carry out the education of owners, managers and workers, they will apply American methods. Also, this thought should not be slurred over—that perhaps the expressed attitude toward American methods is political. For example, with the large unemployment in Great Britain how could the British delegates go home and admit that they had urged mass production and the rapid mechanization of industry!

Politics Versus Economics

Thus may politics be shrouding a question of economics; the repercussion of economics on the political order.

Commenting on the extent of American investments in Europe in recent years, W. T. Layton, editor of "The Economist," London, asked the American delegation whether America would continue to lend freely but would not buy from Europe. He asked also whether a new equilibrium could be established in which America would buy the natural products of tropical countries on a scale large enough to enable her creditor position to be liquidated by a system of triangular trade.

Replying to Mr. Layton, Mr. Robinson pointed out that our imports of manufactured goods, which come mostly from Europe, have doubled from 1913 to 1926. Europe's own figures of her exports to the United States in 1925 from the five principal countries of Europe, namely Great Britain, Germany, France, Italy and Belgium, show an increase of 76 per cent while her exports to the rest of the world increased 24 per cent. In addition American tourists spent $650,000,000 in Europe last year.

As to triangular trade Mr. Robinson pointed out that ten countries outside of Europe, where European capital is largely invested and there is virtually no American capital, sold to the United States in 1925 goods to the increased value of 362 per cent as against 1913, while other countries had increased their purchases by only 87 per cent. The United States buys from Brazil three times as much as that country buys from the United States, but Brazil buys three and three-quarters times as much from a "single European country" as that country buys from Brazil.

Pretty good answers they seem to be!

Another point that interests Americans—and surprises them—is the apparent deprecation by Europeans of the possibilities of the home market. Constantly they harp on America's huge "homogeneous" home market. True, we have a population of 120,000,000 (but not so highly homogeneous as the Europeans imagine). Great Britain has about 43,000,000, France, 40,000,000 and Germany 60,000,000, surely markets not to be sneezed at. Moreover, one needs to remember that the American market is pretty well supplied; our standards of living are high compared with those of Europe. Think, then, of the market afforded by the opportunity to raise European standards to a point somewhat nearer the American.

Europe Deprecates Home Market

Let it not be thought that the Europeans forget the home market. They do not, but their hourly emphasis on our home market shows that they are inclined to deprecate their own, or at least fail to think of it in terms of large populations capable of being raised to much higher levels. A few did paint the home market in emphatic terms, among them Dr. A. R. Zimmerman, who did such a notable job in Austria.

Also outstanding is a matter of omission rather than of commission—namely, the relative neglect of the need for securing economy in distribution. True, several speakers made passing reference to it, but the only vigorous declaration came from Frau Emmi Freundlich, of the Austrian delegation. Of course, the Conference's Committee on Agriculture appreciates the economics of distribution and is giving it a lot of attention.

In America, needless to say, the interest in increasing efficiency in the distribution of the products of industry promises soon to equal our interest in production economies. Since production methods have been so highly developed we see, too, a larger possible percentage of savings in distribution. This idea surely has not "caught on" in Europe.

In these ways, then, have American ideas been before the conference or have—by contrast—failed to appear. The further progress of Europe along our paths, or her departure therefrom, will be a study charged not only with interest but with concern for our manufacturers; for to an extent, Europe is a competitor, a competitor we welcome but about whose progress we must be informed.

The new dynamite plant of E. I. du Pont de Nemours & Co. at Mineral Springs, a short distance from Birmingham, Ala., which has just been completed, began the actual manufacture of dynamite on May 16. This is the largest dynamite plant in the South and has an annual capacity of 15,000,000 lb. It is contained within an area of 1,280 acres and comprises some fifty separate buildings of the most modern type for this kind of manufacture and equipped with the latest machinery.

News Of the Industry

Lake Cargo Rates Cut 20c. per Ton From Pittsburgh and Eastern Ohio; Suggest 10c. Cut from Fairmont

A reduction of 20c. per net ton has been ordered in the rates on lake cargo coal from the Pittsburgh, Ohio No. 8 and Cambridge districts to lower lake ports by the Interstate Commerce Commission as a result of the Commission's rehearing in *Lake Cargo Coal Rates, 1925*, 126 I.C.C. 309.

The decision of the Commission, handed down last Saturday, orders the railroads to establish the lower rates to Toledo, Sandusky, Huron, Lorain, Cleveland, Cleveland Harbor, Fairport Harbor, Ashtabula Harbor, Ohio, and Erie, Pa., not later than Aug. 10, 1927.

The Commission, in a 7 to 2 decision, reversed the findings of Commissioner Hall, who two years ago held that the Northern districts had not made out a case of unreasonableness, and found that the rates complained of were unjust and unreasonable. The majority opinion, however, declined to find the adjustment under attack unduly prejudicial to Ohio and western Pennsylvania.

The opinion holds that northern West Virginia operators, who also attacked the general adjustments of rates to the lakes, have not shown that their rates are either unreasonable or unduly prejudicial. The opinion suggests, however, that the rates from the Fairmont district might be reduced to $1.71 —a cut of 10c.—"without creating too small a differential over those from the Pittsburgh and Ohio districts."

Fix Rates Close to 1925 Proposal

The present rates are $1.63 from the No. 8 and Cambridge fields and $1.66 from the Pittsburgh district. The rates now fixed are 1c. higher than those suggested in the tentative opinion submitted early in 1925. During the original hearings the complainants proposed rates of $1.42 and $1.45. In final arguments at Washington last February counsel for the Pittsburgh interests declared that $1.06 was the charge justified by the cost studies made in the case and counsel for the eastern Ohio operators fixed $1.26 as the maximum.

"The finding in our previous report that the rates from the complaining districts were not unreasonable," concludes the Commission, "was based largely on comparisons with the local rates on commercial coal. At that time the majority did not see sufficient reason for reducing the rates on lake cargo coal which were already somewhat lower than the rates on commercial coal. Upon further hearing, however, additional facts have been brought to our attention which with the facts heretofore of record indicate the propriety of lower rates on lake cargo coal than commercial coal."

Among the facts mentioned are more concentrated movement of lake cargo coal during the most favorable period of transportation, fewer joint-line hauls, less terminal service and the greater availability of cars used for shipping lake cargo coal for return loading with ore. "The voluntary maintenance of rates on lake cargo coal from 78 to 95 per cent of the corresponding rates on commercial coal is not without significance. The lake cargo coal rates are in the nature of proportional rates, and we have frequently prescribed such rates on a lower basis than the corresponding local rates."

Cites Shifts in Movement

The Commission emphasizes the shifts in the trend of lake cargo coal movement since the original report, which stressed 1923 figures, was issued. In that report, "we pointed out that in 1923 Ohio No. 8 shipped more lake cargo coal than all the Kentucky districts combined, but on further hearing it is shown that in 1924 Ohio No. 3 shipped 663,000 tons less than Kentucky and in 1925 Kentucky shipped 5,291,000 tons more than Ohio No. 8." In the same manner, other conclusions with respect to relative growth from eastern Ohio and southern West Virginia and the rate of decline in shipments from the Pittsburgh district were upset by the figures for 1924 and 1925. This situation is illustrated in the accompanying table showing shipments of lake cargo coal in million tons for 1909, 1911, 1913, 1921, 1923, 1924 and 1925.

When the original hearings in the present case were held, says the Commission, the coal-mining industry in Ohio and Pennsylvania was in a comparatively prosperous condition. Since then 12,000 to 15,000 miners have left the Ohio fields and the number working in the Pittsburgh district has decreased 20 per cent, "while employees in other industries increased 40 per cent and the coal business is in a depressed condition. It does not appear that all this is due solely to the rate adjustment, but if that adjustment is improper it is our duty to correct it so far as posto the conditions existing in the industry under the provisions of the Hoch-Smith resolution."

Summarizing its conclusions on the reasonableness of the rates, the Commission states that it has taken into consideration the unusually favorable circumstances and conditions surrounding the movement of lake cargo coal traffic, the much relatively much lower rates from the Southern districts, "which the carriers serving those districts find profitable to maintain"; the shift in tonnage; the depressed condition in the Northern fields; "and the fact that the cost of the service warrants a substantial reduction in rates."

Many Conditions Considered

Turning to the issue of undue prejudice and preference, the Commission holds that the facts in the *Swift Lumber Co. case*, relied upon by complainants, "are somewhat different from those of this case, where there are several carriers forming through routes from the complaining districts to the ports which do not participate in the rates or traffic from the preferred districts, and likewise there are certain carriers forming important through routes from the southern West Vir-

Lake Cargo Coal Shipments by Districts

District	1909 Million Tons	1911 Million Tons	1913 Million Tons	1921 Million Tons	1923 Million Tons	1924 Million Tons	1925 Million Tons
Total lake cargo coal	15.351	21.627	26.830	22.364	29.840	22.981	26.333
Pittsburgh (including Moundsville)	7.843	10.072	12.291	6.236	8.615	3.768	2.867
Pennsylvania outside Pittsburgh	.213	.156	.301	.754	1.582	1.032	.374
All Ohio	2.918	4.110	5.646	5.538	5.953	4.004	1.452
Northern Ohio[1]	.068	.140	.226	.209	.362	.057	.016
Ohio No. 8	1.325	1.926	2.987	3.679	3.716	2.851	1.316
Cambridge	.326	.673	1.036	.982	.955	1.005	.004
Crooksville, Hocking, Shawnee, Pomeroy and Jackson County	1.200	1.371	1.398	.669	.920	.090	.115
Fairmont	1.277	1.784	2.132	.686	2.532	.885	1.623
Southern West Virginia	3.052	5.452	6.030	6.517	7.859	9.716	13.289
Kenova-Thacker only	.241	.381	.588	.191	.383	.978	1.794
Kanawha	1.777	3.108	2.956	3.687	4.582	5.755	7.803
New River	.236	.639	.488	.209	.449	.353	.396
Pocahontas and Tug River	.799	1.324	1.998	2.431	2.446	2.631	3.295
A.l Kentucky	.008	.010	.397	2.624	3.297	3.514	6.607

[1] Includes Middle and several smaller districts, all north of Ohio No. 8.

ginia and eastern Kentucky districts which do not participate in the rates or traffic from the complaining districts. The last-mentioned routes are those formed by the Chesapeake & Ohio or Norfolk & Western in connection with the Hocking Valley.

"The fact that the latter joins with certain of the lines serving the complaining districts in joint rates from some of the preferred districts does not make it responsible for the rates maintained by the other lines from the complaining districts, but even if it did, the Hocking Valley's withdrawal from the joint rates referred to would not affect the same rates maintained by it in connection with the Chesapeake & Ohio or Norfolk & Western.

No Undue Prejudice

"It is true that undue prejudice and preference were found in the *Lake Cargo Coal Case of 1917*, but it does not appear that the question here raised was considered in that case; and, moreover, the finding there applied to the differentials over the Ohio No. 8, Cambridge, and Hocking districts, which all take the same rates, but the last-mentioned district is served by the Hocking Valley, so the situation was different. Under the circumstances of the present case, we have for many years held that no undue prejudice or preference may be found, following *Ashland Fire Brick Co.* v. *S. Ry. Co.*, 22 I. C. C. 115. The doctrine of that case has been recognized and followed since the decision of the Supreme Court in the *Swift Lumber Co. case*. See *Lake Dock Coal Cases*, 89 I. C. C. 170, 185.

In fixing the Pittsburgh rates at $1.46 and the eastern Ohio at $1.43, the Commission adds that it does not "regard the present relationships between the rates from the complaining Pittsburgh-Ohio districts and the Southern districts as proper, but the reductions required in the rates from the Pittsburgh and Ohio districts will go far toward removing the alleged undue prejudice to those districts, and following the principle of the *Ashland Fire Brick case*, we adhere to our previous findings on the question of undue prejudice and preference. It is expected, however, that the carriers will increase the differentials between the above-mentioned districts and the Southern districts by the amount of the reduction in the rates from the former, subject to what is said below regarding the rates from the Fairmont district.

Must Justify Charges

"The record is not sufficiently developed to warrant specific findings with respect to the relationships between the rates from the complaining Pittsburgh and Ohio districts and other districts in Ohio, Pennsylvania and Maryland which ship lake cargo coal, but the carriers should be prepared to justify any change in the present differentials between those districts with the exception of the differential from Connellsville over Pittsburgh, which is now 40 per cent of the differential from Fairmont over Pittsburgh and might properly be increased to the same percentage of the differential from Fairmont over Pittsburgh that is established pursuant to this decision.

"Under the issues now presented, it is unnecessary for us to consider whether the rates from the Southern districts are lower than reasonable minima, but we are of the opinion that the carriers would not be justified in reducing the present rates from those districts. This does not apply to the rates from the Fairmont district, which might be reduced to $1.71 without creating too small a differential over those from the Pittsburgh and Ohio districts. We do not, however, find the rates from the Fairmont district unreasonable or unduly prejudicial, as alleged."

Commissioner Hall Dissents

Commissioner Hall, who wrote the opinion in the original case, dissented from the present findings and takes issue with "the intimations by the present majority that the additional record developed upon further hearing warrants their change in conclusions." He contends that, "judged by all standards which we are wont to apply, the assailed rates, viewed even as individual rates, must be found reasonable." Commissioner Hall protests against what he conceives to be an attempt to make freight rates the scapegoat for other economic disabilities.

Says Future Issues Are Prejudged

The dissenting Commissioner also criticizes the majority for expressing the opinion that rates from the Southern districts should not be reduced. This, he thinks, prejudges issues which may come before the Commission. "What right," he asks, "have we to invade the domain which the law has allotted to carrier management and to seek by hint, suggestion, warning or threat to coerce carriers into a course of action other than that which they have chosen or may choose to take? The essence of the Transportation Act is regulation and not management. That act was not a general reform act, giving us powers to redistribute the business or the wealth of individuals, or of producing regions, in accordance with whatever social, economic or sectional views might at a given time command a majority of votes in this Commission."

Labor Will Seek Laws Against Injunction Abuse Green Tells Civic Federation

Labor will seek legislation in the various state legislatures and in Congress to protect itself "against the abuse of the writ of injunction," William Green, president of the American Federation of Labor, informed the Industrial Round Table of the National Civic Federation at a luncheon May 25 in the Bankers' Club, 120 Broadway, New York City. Labor, he added, cannot reconcile itself to such decisions and live.

Mr. Green opened his address with the contention that no nation can successfully compete with other nations unless its labor, like industry and capital, is allowed to organize. He then cited various court decisions upholding injunctions in labor disputes.

"In such a dilemma what can labor organizations do?" he demanded. "To obey these injunctions means annihilation, death and destruction. To violate them means persecution and punishment. Labor protests against being placed in such a position.

"It is the purpose of the American Federation of Labor to seek a remedy for the injunction evil. We shall draft and propose legislation having this subject in view.

"We have long believed that the Sherman anti-trust law was a barrier to industrial, economic and agricultural development. It has not prevented the growth and expansion of big business, but in addition to hampering labor it has served to restrict and circumscribe legitimate business and legitimate business enterprises. It has served to create uncertainty and a feeling of insecurity among business men as well as among trade unionists."

Mr. Green praised the dissenting opinion of Justices Brandeis and Holmes in the Bedford Cut Stone case. He said that although members of the Stone Cutters' Union were not permitted to work in the quarries of the Bedford Cut Stone Co. because they were union men, the company sought by injunction to have the men work indirectly for them in towns where the company's stone was used.

The decision, according to Mr. Green, forced men to perform work they had refused to do "and to serve the Bedford company against their will and under fear of punishment."

"The Court's order," he continued, "serves to strip them of the use of their economic strength, the only power workingmen may exercise as a means of protection against injustice and oppression. It means forced labor in a free country governed by a Constitution and where free government derives its powers from the consent of the governed."

Walter Gordon Merritt, a legal authority on the open shop, associated with the counsel for the Bedford Cut Stone Co. in its appeal for an injunction, disagreed with Mr. Green's argument against the majority decision of the Supreme Court in the stone case. Justices Brandeis and Holmes, said Mr. Merritt, never rendered an opinion which showed more clearly a social attitude without logic than in the stone case. That the stone cutters' union was guilty of restraint of interstate trade was easily susceptible of direct proof, he said.

Parley of Central Pennsylvania Miners And Operators Recesses Till June 15; Situation Unchanged in Other Fields

Further consideration of the negotiation of a new wage conference in central Pennsylvania has been postponed until June 15. In the meantime operators who have been working under the temporary agreement proposed by the union will continue to pay the Jacksonville scale until a new contract has been signed or the wage conference is adjourned *sine die.*

This decision was reached at a joint conference of the scale committees of the Association of Bituminous Coal Operators of Central Pennsylvania and district 2 of the United Mine Workers at a meeting in the Bellevue-Stratford Hotel, Philadelphia, Pa., late last Friday afternoon. The agreement to recess came after five days of joint negotiations during which neither side was willing to yield on the question of wages.

The position of the operators, as embodied in an official statement issued after the end of the conference last week, is as follows:

"(1) The operators cannot renew the present basis of wages contained in the so-called Jacksonville agreement, which expired March 31, 1927, due to the unfavorable competitive conditions in the markets natural to central Pennsylvania.

"The mines represented by this association produce about 5 per cent of the coal mined in the fields serving consumers in the New England and Middle Atlantic states and the tidewater markets. Investigation discloses for the year 1926 that 90 per cent of the coal mined for these markets was on a wage basis 25 per cent lower than that paid under the union scale. In other words, 10 per cent was produced on the basis of $7.50 per day of 8 hours.

Indorse Collective Bargaining

"(2) For a period of over 30 years the principle of collective bargaining affecting wages and working conditions has been followed by this association. It is sincerely hoped that that principle may be continued.

"(3) This association believes that the failure of the present joint conference is due to the policy of the United Mine Workers in refusing to negotiate a wage agreement with it because a basic agreement has not been concluded between miners and operators of other districts which are not competitive with central Pennsylvania coal mines and it now wishes to protest against further continuance of this policy on the part of the union.

"(4) This association requests the United Mine Workers District 2 to begin negotiations for a wage scale based upon the competitive conditions affecting central Pennsylvania mines and such other proper factors as should be given consideration in such a joint conference to the end that central Pennsylvania mines may enjoy their proportion of the coal business and furnish employment to the miners.

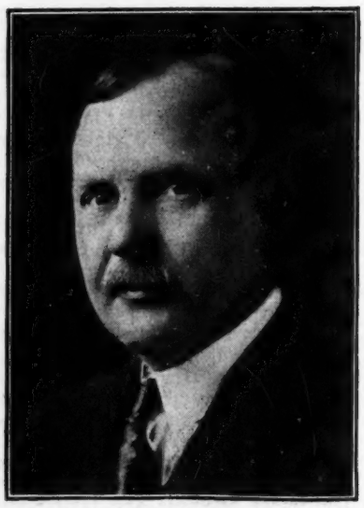
"(5) The association, reserving the right of action to its individual members as contained in the letter of March 11, 1927, will continue the temporary arrangement as to existing wage rates and working conditions until the reconvening as of June 15 of this joint conference when said temporary arrangement will be superseded by a new wage agreement or terminated upon the day of the *sine die* adjournment of such joint conference."

The miners at the close of the conference issued a statement disputing the figures produced by the operators. The miners declared that present wages and conditions were not adequate to afford them the plane of living to which they were entitled by reason of the laborious and hazardous character of their work.

That a recess could not be avoided did not clearly develop until the subscale committee sessions on May 26. Up to that time the attitude on both sides had been one of optimism. When the joint conference settled down to business after the arrival of Thomas Kennedy, international secretary-treasurer of the United Mine Workers, Charles O'Neill, chairman of the operators' scale committee, made a general presentation of the situation from the standpoint of the producers. Mr. Kennedy and James Mark, president of district 2, opened for the miners.

Feel Open-Shop Rivalry

On behalf of the employers it was pointed out that the union operators of central Pennsylvania were at a substantial disadvantage in marketing their coal in competition not only with non-union West Virginia but also in competition with the open-shop mines in their own district. The number of the latter had shown a marked increase since the Jacksonville agreement. This,



J. W. Searles

President of the Pennsylvania Coal & Coke Corporation, who was elected chairman of the central Pennsylvania wage conference.

Charles O'Neill

it was argued, had reacted adversely upon the union as well as upon the coal producers. Whereas in 1922 the district organization had a membership of 49,000, today the membership did not exceed 21,000 and probably was less. Since 1924 union membership in the district had declined 17,000.

Union operators had been forced to surrender 3,000,000 tons of business annually in New England as a result of the burdens placed upon them by union scale conditions. While it was admitted that there might be some basis for the charge that New England buyers were under the influence of an anti-union complex, it was clear that price was the controlling factor in that market. If union mines in central Pennsylvania could meet competitive price conditions, the New England buyer would not turn them down because the coal offered was produced by union labor.

In demanding relief from the Jacksonville scale, however, the operators did not ask that the union accept the continuously competitive wage basis urged in the Central Competitive Field negotiations. Central Pennsylvania producers, it was indicated, were willing to agree to a fixed basis for a stated term and were willing to take their chances upon competition which might later develop. In this they felt that they were only asking the mine workers to take an equal risk with them.

Miners Disclaim Setting Scale

On behalf of the miners it was urged that the Jacksonville scale was not unreasonable. A point was made that this scale was the outgrowth of arbitration proceedings under federal government auspices in which the representatives of the public and of the operators had agreed and to which the representative of the miners had dissented. From this it was argued that there could be no claim that the scale had been fixed too high.

The miners also insisted that any inability of the operators to compete against other fields was not the fault of the workers. They intimated, without giving any bill of particulars, that great economies could be effected

through more efficient management. The suggestion was made that the basic trouble was overcapacity and that this could be curbed through a series of consolidations which would close down unnecessary mines. Mention was made of the stabilizing influence of the Steel Corporation in the iron and steel industry as a model for the coal trade to follow.

Replying to the miners' arguments, Mr. O'Neill emphasized the fact that it was not the total consumption but the shifts in tonnages with which they were concerned. There was no objection on the part of the employers to high wages; they favored them. But they were faced with the fact that approximately 90 per cent of the output now mined was being produced at wage rates materially lower than those incorporated in the Jacksonville agreement and that the union operators could not hope to continue to sell in competition with this tonnage and still maintain materially higher wage scales.

Following the general presentation, the conference then appointed a subscale committee of 12 members. Charles O'Neill, president of the Association of Bituminous Coal Operators of Central Pennsylvania; F. E. Herriman, president, Clearfield Bituminous Coal Corporation; Rembrandt Peale, president, Peale, Peacock & Kerr, Inc.; J. William Wetter, manager of bituminous operations, Madeira, Hill & Co.; J. W. Searles, president, Pennsylvania Coal & Coke Corporation, and M. J. Bracken, president, Argyle Coal Co., were named for the operators. James Mark, president of district 2, United Mine Workers; Faber McCloskey, vice-president; Richard Gilbert, secretary-treasurer; George Bassett and John Boyle were named for the miners, with Thomas Kennedy as the sixth member.

This committee discussed the situation informally May 25 and 26 without coming to any agreement. When it became clear to the operators that the union men would not consider any agreement that did not involve a renewal of the 1924-27 scale, the operators held a separate meeting to determine what plan of action should be followed. Out of this meeting grew the program adopted at the final session of the conference last Friday afternoon.

Ohio to Make Direct Appeal

A shift in the policy of the Ohio Coal Operators' Association took place at the regular meeting of the executive committee of that organization held at the Neil House, Columbus, May 25, when it was decided to hold "family conferences" with idle miners to see if they can be induced to work on a continuously competitive scale. S. H. Robbins, president of the association, declared that the outlook for settlement of the wage dispute which arose with the expiration of the Jacksonville scale is particularly gloomy at this time; he asserted that a new policy has been put into effect.

Operators do not plan to attempt further negotiations with the union officials, but will try, as individuals, to settle the matter by direct contact with the miners. This program is to be left

Thomas Kennedy

to the individual companies. "The men heard one side of the story from union officials," Mr. Robbins said, "and now we want to submit our case to them and give them our side of the story."

Attorneys for the Powhatan Mining Co. have started eviction proceedings against three miners occupying company houses on its property at the Dillies Bottom and Stewartville operations of the company in Jefferson County. Additional suits will be filed and it is planned to oust about 300 families occupying company houses.

Attack Due to Misunderstanding

According to operators who attended the executive meeting, the recent attack upon men working at the mine of the New Pittsburgh Coal Co. at Robeyville on May 23 was the result of the belief of union sympathizers that the operation was being cleaned up preparatory to reopening non-union. As a matter of fact, a number of men had applied for jobs at repair work. When they started, however, a crowd of union sympathizers gathered, attacking the workers with stones and other missiles and compelling the workers to leave the mine property.

Ohio and Pennsylvania operators deny that there is any ground for the assertion of union officials that the decision of the Interstate Commerce Commission, handed down last Saturday, reducing rates on lake cargo coal from the Pittsburgh and No. 8 fields will mean any early resumption of mining on the Jacksonville scale. The reduction, they say, will not overcome the handicap of the lower wages in the Southern fields.

There has been no change in the situation in western Pennsylvania over the past week. John L. Lewis, president of the United Mine Workers, was in Pittsburgh last week, cheering his followers in that district. While there he predicted that the suspension would begin to crumble about July 1.

"The market will begin to rise in July," Mr. Lewis said. "I am not inclined to believe the operators will take the chance of losing it. The majority will sign temporary agreements."

The reserve stock of 90,000,000 tons the industry piled up prior to April 1 is being depleted at the rate of 3,000,000 tons a week, the union chief claimed. The industry, he said, is now producing 8,000,000 tons weekly to meet the consumption of 11,000,000 tons weekly.

"Conditions are perfectly normal as normality goes in the coal business," Mr. Lewis continued. "It seems paradoxical to say that in view of the suspension, but it is true. If there were no suspension there would be no more miners at work than there are now. The reserve stocks are too great."

A report from Pittsburgh that the Ford Collieries Co. had signed a temporary agreement with the union to reopen its mines was denied May 31 by J. A. Curtis, vice-president, who informed *Coal Age* that there was "absolutely no truth" in the rumor.

The Pittsburgh Terminal Coal Corporation continued its efforts last week to hurry a final court decision on its eviction proceedings, asking the Court of Common Pleas to advance arguments in its petition to strike off supersedeas bonds filed by eight miners in their appeals to the Superior Court.

Court action to compel Governor Fisher to produce the official records in the appointment of coal and iron police is threatened by counsel for the United Mine Workers. It is charged that a number of appointees have been imported from other states in disregard of the provisions of the Pennsylvania laws. Union officials have been denied access to the records giving the places of residence of the guards and the names of their sponsors.

Other developments of the week in western Pennsylvania included a reversal of the decision of a justice of peace at Clairton fining six pickets arrested several weeks ago at Suterville on the charge of disorderly conduct. The case was appealed to the County Court and a remission of the fines was ordered. On May 24 a dynamite blast explosion wrecked over 100 feet of the main line of the Pittsburgh & West Virginia Ry. near Castle Shannon and temporarily halted traffic from the Coverdale mine of the Pittsburgh Terminal Coal Corporation.

Pittsburgh Coal Co. Output Gains

The Pittsburgh Coal Co. reported its production for the week ended May 21 as 121,141 tons. The average number of men employed was 5,453. This was an increase of 5.1 per cent in output and 4.3 per cent in the number of men at work. The tonnage mined was the largest reported since the second week of March.

Continued unsatisfactory market conditions was held responsible for the unchanged situation of mining in the Indiana and Illinois fields. Mines operating are having a difficult time in disposing of their daily production.

The Saline Valley Coal Co., operating at Carriers Mills, in the Harrisburg district, has signed up with the union, according to late reports from southern Illinois. The company is said to have closed a contract which will permit it to work at capacity for several weeks to come. The operation, a slope entry, employs about 20 men and has a daily capacity of 200 tons.

Taplin Wins First Skirmish In Rail Merger War

Frank E. Taplin of Cleveland, chairman of the board of the North American Coal Corporation, Pittsburgh Terminal Coal Corporation and the Pittsburgh & West Virginia Ry., was the central figure in several developments last week in connection with proposed Eastern railroad consolidation besides being named in a rumor of an impending merger of the Pittsburgh Coal Co. with the Pittsburgh Terminal Coal Corporation. He denied the truth of the latter report.

Mr. Taplin has thrown down the gauntlet to the Baltimore & Ohio, the New York Central and the Nickel Plate in connection with the proposed absorption by them of the Wheeling & Lake Erie and Western Maryland railroads.

The first successful move was when Mr. Taplin succeeded in having himself, C. F. Taplin and George Fillius, all of Cleveland, elected to the board of the Wheeling & Lake Erie at the meeting of that road May 25. The second winning skirmish came on the following day when the Interstate Commerce Commission permitted the Pittsburgh & West Virginia and the Wabash to intervene in the hearings on June 20 on the applications of executives of the "Big Three" for memberships on the Wheeling & Lake Erie board.

The Pennsylvania R.R. also obtained permission from the Interstate Commerce Commission on May 27 to intervene in the application of the Pittsburgh & West Virginia Ry. for authority to construct a 33-mile extension from Cochran's Mill to Connellsville, Pa. The extension would link the Pittsburgh & West Virginia directly with the Western Maryland Ry., providing a trunk line from tidewater to the Great Lakes via the Wheeling & Lake Erie. This would tend to divert through traffic that might otherwise go from the Wheeling to Pittsburgh and then to the Western Maryland over the Pittsburgh & Lake Erie.

Existing Facilities Called Ample

The New York Central, controlling the Pittsburgh & Lake Erie, does not propose to become a party to the case, but has advised the Interstate Commerce Commission that the territory through which the extension will pass is now amply served by existing railroads. The Western Maryland, in which the Baltimore & Ohio has more than a 42 per cent stock interest, seeks permission to appear in the case to protect its interests and the Baltimore & Ohio will oppose the application.

The conflict now brings the Pittsburgh & West Virginia and Wabash against the B. & O., New York Central and Nickel Plate, which are seeking to vote their controlling stock for their own nominees to the Wheeling board, and the Pennsylvania, Western Maryland, B. & O. and New York Central against the Pittsburgh & West Virginia's move for expansion.

The intervention of the Wabash appears to indicate that the hand of Leonor F. Loree, president of the Delaware & Hudson and the avowed enemy of the "Big Three" in consolidation matters, may be felt in the final battle over the Wheeling & Lake Erie. His connection with the present tangle is emphasized by the facts that William H. Williams, chairman of the Wabash, is also a director of the Delaware & Hudson, that both these roads held a leading position in Mr. Loree's contemplated fifth trunk line system, and that both roads maintain banking connections with Kuhn, Loeb & Co.

Taplin Spikes Rumor

An important angle in the possible tie-up of big Eastern railroad interests to oppose the plans of the "Big Three" came in the form of a rumor that the Taplin interests had sold to the Pennsylvania R.R. a block of Pittsburgh & West Virginia stock at $200 a share, which, however, Mr. Taplin emphatically denied.

Asked to explain his theory that "trunk lines have bought into Pittsburgh & West Virginia," Mr. Taplin refused to say what trunk lines he referred to, nor would be say what amount of stock the interest which controls the Pittsburgh & West Virginia owns in the Wheeling & Lake Erie, but it is understood to be larger than the amounts held by any of the "Big Three" individually.

Strikers Act as Caddies With Boys at School

On sunny week days there has been a shortage of caddies at golf courses in Pittsburgh, Pa., this spring. An unexpected solution of the difficulty has been found, however, as a result of the suspension of coal mining at union operations in the district. The mine workers are able to earn several dollars a day on the links while the mines are idle and golfers declare they make even more satisfactory caddies than boys, who are now unobtainable in sufficient numbers because school is still in session.

National to Help Curtail Mine Accidents

In an effort to reduce the number of accidents at the face of the seam in coal mines the National Coal Association will promote further co-operative studies of such accidents, according to an announcement by Walter Barnum, president of the association. Such a study has been under way for the past year in West Virginia, where there was a material reduction in the number of fatalities during the first quarter of 1927 as compared with the same period last year, notwithstanding more coal was produced in that period this year than last.

Accidents at the face account for nearly half of the accidents in coal mines, and in promoting intensive co-operative studies of such accidents by bituminous operators and interested officials the National Coal Association hopes to bring about a curtailment of the number of such accidents.

To Conduct Summer School For Engineering Teachers

The Society for the Promotion of Engineering Education announces that a summer school for engineering teachers will be established and the first sessions held in the summer of 1927. The Carnegie Corporation of New York has appropriated funds to operate the school for one year.

The establishment of the school is an outgrowth of the extensive investigation of engineering education which the society has been conducting for the past three years. The project was suggested by W. E. Wickenden, director of the society's investigation, as a result of his study of a similar school conducted in England. The project has been studied by the society's committee on teaching personnel, under the chairmanship of Dean Charles H. Warren of the Sheffield Scientific School of Yale University, and was formally recommended by that committee as a project which should be undertaken at as early a date as possible.

Two sessions of the school, each of approximately three weeks duration, will be held during the first year. Cornell University and the University of Wisconsin have been tentatively selected as sites and negotiations opened with the authorities of those institutions. It is expected that tuition charges and living costs will be low.

The teaching of mechanics has been selected for the first sessions and the work will be divided into three principal divisions: (a) The teaching of pure mechanics (analytic mechanics), (b) The teaching of the applications of mechanics in related fields, and (c) The exposition of methods of teaching in general.

Morning sessions will be devoted to lectures, demonstrations and laboratory exercises designed to illustrate methods of presenting particular divisions of the subject. The organization, content and scope of courses in mechanics will be discussed. Methods of teaching will be presented partly by precept and example and partly by lectures devoted to teaching methods in general. Afternoon sessions will be devoted to group discussions and to analyses of the work of the mornings. Evenings will be devoted to lectures on general topics relating to engineering education and to recreation.

Industrial Conference Board Names Osborne Chairman

Frederick P. Fish, of Fish, Richardson & Neave, Boston, Mass., was elected honorary chairman of the National Industrial Conference Board at its eleventh annual meeting, held in New York City May 19. Loyall A. Osborne, president, Westinghouse Electric International Co., New York City, was appointed chairman; Charles Cheney, president, Cheney Brothers, South Manchester, Conn., and William H. Nichols, Jr., president, General Chemical Co., New York City, vice-chairmen; Magnus W. Alexander, New York City, president, and Fred I. Kent, vice-president, Bankers' Trust Co., New York City, treasurer. J. M. Robertson was elected secretary of the board.

Squeeze in Anthracite Colliery Entombs Men; Explosion Follows Fire

No. 3 shaft of the Glen Alden Coal Co.'s Woodward colliery, which serves largely for the passage of air and is located in the flats between Kingston and Wilkes-Barre, Pa., and nearly a mile from the main shaft and breaker of the colliery, was the scene of three accidents last week all arising out of a heavy squeeze. Seven men are believed to be dead, more than a score were injured and about forty-five had narrow escapes from probable death.

The deaths and most of the injuries were caused by a heavy squeeze May 28 in the Baltimore seam, which is about 800 ft. below the surface. The bodies of two miners have been removed from the workings and five others are missing amid thousands of tons of rock and coal.

The fall of roof came suddenly after a week's effort to prop up the roof in 1 and 2 west gangways in No. 3 shaft of the Woodward colliery. The affected workings lie under the flood-swollen Susquehanna River and miners who came to the surface Saturday afternoon stated that they heard rumblings just before the fall came.

Early the next morning, five minutes after the night rescue gang had left the mine, there was a severe concussion that further damaged the workings and wrecked a concrete fan house on the surface, slightly injuring two men inside. The day shift of rescue workers was about to enter the mine when this blast occurred.

On Sunday a terrific explosion of gas wrecked the superstructure of the shaft, tossed timbers in the air and caused a number of minor injuries in surrounding territory from flying glass and falling plaster. There were no deaths, however.

It is stated that a fire is raging in the Baltimore seam and perhaps, though this is not known, into other beds. In consequence a barrier will be constructed at the far end of the squeeze in the Baltimore shaft and in all openings leading to the main shaft at Edwardsville. When this is done the workings of No. 3 shaft will be flooded and the shaft will be sealed.

Six Killed, 155 Escape In Colorado Blast

Six men were killed, one suffered a broken leg and 155 escaped May 27 when there was an explosion in the Delagua mine of the Victor-American Fuel Co., at Delagua, Colo., 10 miles from Aguilar. The blast occurred near the entrance of the mine, and for over two hours the entire crew of 162 men were prisoners.

James Struthers, superintendent of the mine, organized crews of volunteers immediately after the explosion and attempted to break into the closed shaft. A little over two hours later the survivors marched over the hill, led by Dan Woods, 60-year-old assistant foreman, who showed the way through the seldom used north entrance.

Rescue crews immediately entered the mine in search of the six still missing. The bodies of all were found near the mouth of the mine close to the center of the explosion.

A runaway train of loaded cars is blamed for the explosion. The train, comprising 20 cars, had been loaded with coal and was ready to leave the mine. The cars were about 2,000 ft. from the mine mouth, at the top of an incline, when suddenly they broke loose and started down the slope, filling the shaft with fine coal dust.

Cars Jump the Track

Several cars left the track and crashed into the timbering when a coupling broke. An electric arc, apparently from the trolley wire, ignited the coal dust and caused the blast.

The explosion shook buildings and broke windows within a mile of the mine. The mine had been working on full time and the day shift was on duty when the blast came.

The ventilating system was still able to function and was set in full operation immediately.

Rescue crews of the Bureau of Mines, the Victor-American Fuel Co. and the Colorado Fuel & Iron Co. were dispatched to clean away the débris.

A mine rescue car stationed at Trinidad was hurried to the scene. Scores of first-aid crews from the great mining district about Walsenburg were at Delagua within an hour after the disaster.

All available men from the Colorado Fuel & Iron Co.'s mines at Berwind, Tabasco and Toller, eight miles away, were called out.

The mine is one of the largest in the state. Last year its total production was 384,650 tons of coal.

McAuliffe Among the Doctors

At the commencement exercises held at Rolla, Mo., May 28, for 84 students of the Missouri School of Mines, the University of Missouri conferred on Eugene McAuliffe, president, Union Pacific Coal Co., Omaha, Neb., the honorary degree of Doctor of Engineering. This is the second honorary degree in the fifty-year life of the school, Dr. W. R. Ingalls having been given his honorary degree four years ago. Dr. Walter Williams, dean, school of journalism, University of Missouri, delivered the graduation day address.

Rates to Mississippi Valley Ordered Revised

Revision of freight rates on coal to the lower Mississippi Valley was ordered May 27 by the Interstate Commerce Commission for the purpose of giving mines in Alabama a fairer competitive position in the market. Railroads were ordered to make the new charges effective August 5. This order supplements a decision rendered in 1926, under which the Commission held that coal producers in Illinois and western Kentucky had an unjustified advantage in rates over the Mississippi Valley territory.

When the railroads revised schedules to meet that decision protests from affected territory resulted in their suspension. The Commission's decision last week, however, found that the new schedules proposed on coal to points west of the Mississippi were just.

On the eastern side of the Mississippi, however, the railroad proposals were held to give the Alabama producers insufficient rate advantages as compared with their Kentucky and Illinois competitors. The order provided that four zones should be established on the eastern side of the lower Mississippi, based on distance from Alabama.

In the furthest zone from Alabama, the order prescribed a 35c. differential for the Alabama mines as compared with rates from the Northern mines. This differential ranged upward through the other three zones until in the territory closest to Alabama a rate 45c. lower on coal per ton from that state than from the Northern mines was prescribed. The railroads must submit the rates for approval.

Fuel Cost on Class 1 Roads Declines in March

Coal used in locomotives in transportation train service by class 1 railroads of the United States during March cost an average of $2.66 per ton, according to figures prepared by the Interstate Commerce Commission. The cost includes freight. The average cost by districts was as follows: Eastern, $2.76; Southern, $2.18; Western, $2.90.

In comparison with February figures these averages show a decrease of 5c. in the Eastern district; 2c. in the Western district; an increase of 1c. in the Southern district, and a decline of 3c. for the entire country.

Coal consumption by class 1 roads in this service in March was 8,647,228 net tons, compared with 9,021,226 tons in the corresponding month of 1926. Total consumption for the first three months of 1927 was 25,917,170 tons, against 26,525,104 tons in the preceding year.

A new type of self-unloading collier passed through the Lachine Canal en route to Lake Erie recently. The boat is called the "Valley Camp" and is owned by the Valley Camp Coal Co. She was recently built on the Tyne and brought a cargo of coke from Canada. Self-unloading equipment enables the vessel to discharge her cargo either into another boat or on a dock at the rate of about 600 tons an hour.

Coal-Mine Accidents Cause 244 Fatalities in April; Four-Months Total Lower

Accidents at coal mines in the United States during April, 1927, caused the death of 244 men; 210 occurring in bituminous mines and 34 in anthracite mines, according to reports received from state mine inspectors by the U. S. Bureau of Mines. The death rate per million tons of coal mined during the month was 5.84 for the industry as a whole, based on a production of 41,805,000 tons. The fatality rate for bituminous mines alone, based on an output of 34,674,000 tons was 6.06, while that for anthracite, with a production of 7,131,000 tons, was 4.77. The rate for April was somewhat higher than for the corresponding month last year, due mainly to the heavier loss of life in major explosions in April this year. In April a year ago the number of deaths per million tons was 3.06, the figure for bituminous mines being 2.87 and that for anthracite mines being 4.02.

During the first four months of 1927 812 men lost their lives from accidents in the coal-mining industry. The production of coal during these months was 230,249,000 tons, showing a death rate of 3.53 as against 4.09 for the same four months in 1926. The average rate during the four months for bituminous mines was 3.20 as compared with 4.05 a year ago; that for anthracite mines was 6.16 as compared with 4.41.

Comparing the accident record for the period from January to April of the present year with that for the same period of 1926, a reduction is noted for falls of roof and coal, haulage, and gas or dust explosions, while a slight increase is shown for explosives. The rate for electricity remained unchanged. The comparative rates are as follows, per million tons:

	Jan.-Apr., 1926	Jan.-Apr., 1927
All causes	4.088	3.527
Falls of roof and coal	1.842	1.572
Haulage	0.651	0.595
Gas and dust explosions:		
Local explosions	0.082	0.165
Major explosions	0.919	0.456
Explosives	0.117	0.156
Electricity	0.122	0.126

White Collar Workers Increase Rapidly

The number of office employees and clerks per million of population in the United States, according to the National Industrial Conference Board, increased between 1870 and 1920 in the ratio of one to fourteen; between 1910 and 1925 their number in actual figures almost doubled.

Clerical and sales employees in stores have more than doubled. And while servants, housekeepers and stewards declined over one-third in number per million of population between 1870 and 1920, barbers, hairdressers and manicurists increased over three times, and a further rapid increase has undoubtedly taken place since 1920.

Report Fight On for Control Of Pittsburgh Coal Co.

Marked activity in the stock of the Pittsburgh Coal Co., which advanced steadily last week as thousands of shares changed hands in "over the counter" deals in New York financial houses, is said to be the result of a fight for control of the company by outside interests. The United States Steel Corporation, Standard Oil interests, the Van Sweringens and F. R. Taplin, chairman of the board of the Pittsburgh Terminal Coal Corporation, have been mentioned in connection with the reported battle for control.

According to one report the United States Steel Corporation is buying, in order to gain possession of the Monongahela River frontage of the coal company's property, this being wanted to replenish the steel corporation's coal lands, which will be worked out in fourteen years. It also was reported in financial circles that the deal now on is "a wheel within a wheel," with Standard Oil interests also interested.

It was said that the Van Sweringen or other interests had scouts looking over the Pittsburgh Coal Co. property early in May.

A report that F. R. Taplin, chairman of the board of the Pittsburgh Terminal Coal Corporation, had been buying the stock for some time, with control in view, was branded as "ridiculous" by Mr. Taplin.

C. E. Lesher, executive vice-president of the Pittsburgh Coal Co., said he had heard rumors of deals for domination of the company, but neither he nor other officials made any statement.

Coal-Mine Fatalities During April, 1927, by Causes and States

(Compiled by Bureau of Mines and Published by *Coal Age*)

State	Underground												Shaft					Surface							Total by States	
	Falls of roof (coal, rock, etc.).	Falls of face or pillar coal.	Mine cars and locomotives.	Explosions of gas or coal dust.	Explosives.	Suffocation from mine gases.	Electricity.	Animals.	Mining machines.	Mine fires (burned, suffocated, etc.)	Other causes.	Total.	Falling down shafts or slopes.	Objects falling down shafts or slopes.	Cage, skip or bucket.	Other causes.	Total.	Mine cars and mine locomotives.	Electricity.	Machinery.	Boiler explosions or bursting steam pipes.	Railway cars and locomotives.	Other causes.	Total.	1927	1926
Alabama	3	....	3	....	....	....	....	....	....	....	....	6	....	....	....	....	....	....	....	....	....	....	....	....	6	11
Alaska	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Arkansas	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Colorado	1	....	1	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	2	3
Illinois	....	....	....	1	....	....	1	....	....	....	1	3	....	....	....	1	1	....	....	....	....	....	....	....	4	10
Indiana	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	3
Iowa	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1	0
Kansas	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	1
Kentucky	1	..	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	1	....	2	12
Maryland	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Michigan	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1	0
Missouri	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Montana	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1	0
New Mexico	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
North Dakota	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Ohio	1	....	....	....	1	....	....	....	....	....	....	2	....	....	....	....	....	1	....	....	....	....	....	1	3	8
Oklahoma	1	....	....	1	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	2	1
Pennsylvania (bituminous)	12	....	9	6	3	....	....	....	1	....	....	31	....	....	....	....	....	1	....	....	....	....	1	2	33	30
South Dakota	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Tennessee	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1	4
Texas	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Utah	2	....	1	....	....	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....	....	....	....	3	3
Virginia	3	....	....	....	....	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....	....	....	....	3	1
Washington	....	....	....	....	....	....	....	....	....	....	7	7	....	....	....	....	....	....	....	....	....	....	....	....	7	0
West Virginia	19	3	9	a91	2	....	3	....	2	3	....	132	....	....	....	1	1	1	....	....	....	....	a7	8	141	28
Wyoming	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Total (bituminous)	47	3	23	99	6	....	4	....	3	3	8	196	....	....	....	2	2	3	....	....	....	....	1	8	12	210	115
Pennsylvania (anthracite)	11	4	4	8	6	....	....	1	....	....	....	34	....	....	....	....	....	....	....	....	....	....	....	....	....	34	33
Total April, 1927	58	7	27	107	12	....	4	1	3	3	8	230	....	....	....	2	2	3	....	....	....	....	1	8	12	244	
Total April, 1926	82	9	27	1	7	1	7	....	....	....	6	140	1	1	1	....	3	2	....	....	....	....	2	1	5		148

(a) Explosions killed 97; 91 underground and 6 on the surface. Figures subject to revision.

Hard-Coal Strike Sequel Seen in Steady Growth Of Briquet Manufacture

By Paul Wooton
Washington Correspondent of *Coal Age*

An echo of the anthracite strike is heard in the announcement of figures covering imports of fuel briquets into the United States in 1926. In that year 123,593 tons valued at $736,000 were brought into the country. Before the campaign for the use of substitutes for hard coal it would have required a microscope to find this item in the Commerce Department's statistics of imports. In 1921, for instance, 26 tons of briquets were brought into the country. Germany and the Netherlands furnished 98,000 tons of the 1926 imports. Belgium was the source of 14,000 tons, while 11,000 tons came from Great Britain.

The shortage of anthracite also stimulated a record production at domestic briquetting plants. According to figures compiled by J. M. Corse and F. G. Tryon, of the Bureau of Mines, this infant among the fuel industries of the United States in 1926 contributed 996,000 tons of household fuel, valued at $8,500,000. This was an increase of 19 per cent over 1925 and of 43 per cent over 1923. While it took the anthracite strike to launch this fuel upon popular favor, it has gained ground steadily. At the beginning of 1927 production was proceeding at a new high level.

Plants Increase Output

The trend of the briquetting industry is shown by the development of larger and larger plants. With fewer plants than were in operation in 1911, production now is five times greater. The average output per plant has increased from 10,000 tons to 52,000 tons. There were two plants which produced in excess of 200,000 tons in 1926. When it is remembered that a coal mine producing 200,000 tons or more is classed as a "large mine" and grouped by the Bureau of Mines in Class 1, it can be realized that some of the briquetting works have attained proportions.

The active demand for this household fuel is stimulating the building of new plants, while all the plants which were operating in 1925 continued production during 1926. In addition the Empire Collieries Co. opened its new plant at Pulaski, Va. The Wilkesson Coal & Coke Co. began producing at its plant in Washington while the Salem Briquette Co., of Salem, Mass., has started to produce since the first of the year. Other plants are expected to start this year.

It is expected that this growth will continue as production in this country is still very small as compared with that of Germany, France and Belgium. World production now is at the rate of 50,000,000 tons, of which the United States contributes only 2 per cent.

Even more rapid progress is expected here if the smoke given off by the pitches now used can be eliminated. The way around that difficulty already is suggested by the process of recarbonizing the finished briquet.

Character Expert Tells How to Pick "Live Ones"; Keeps Square Pegs Out of Round Holes

William Kibbey of Detroit, commercial analyst, explained recently to a number of deeply interested wholesale and retail coal men of Cincinnati how he judges the man unit connected with big business. His speciality is keeping square pegs from getting into round holes.

Mr. Kibbey has been employed by the Old Ben Coal Corporation of Chicago to make a character analysis of all its employees. Fred Heitzman, assistant manager of the Cincinnati office of the company, sponsored a dinner at the Cincinnati Chamber of Commerce, where Mr. Kibbey spoke.

Mr. Kibbey said it was necessary to synchronize workmen with the superintendent and even with the boss himself. He got out charts to show character analyses through examinations orally and of the physiognomy. The receding chin and the sloping forehead, the protruding nose and the dished-face oddities of the eyes and the lids were explained.

When Mr. Kibbey called for a subject for a character analysis Nolan L. Mahan, president of the Coal Exchange, responded, and, after giving him "the once over," Mr. Kibbey jotted down in four minutes some of the outstanding characteristics of the subject at hand. After a few quick strokes on a black oilcloth, some 15 ft. long, he had ticked off some thirty-five or forty squares in which were the ratings that he gave Mr. Mahan, which he then explained.

Automatic Control Discussed By Anthracite Engineers

The meeting of the Engineers' Society of Northeastern Pennsylvania, held May 21 in Hazleton, Pa., was both interesting and revealing. C. R. Seem, electrical engineer of the Glen Alden Coal Co., presented a paper on automatic control of mine equipment and Lee H. Miller, chief engineer, American Institute of Steel Construction, Inc., gave a talk on steel construction.

Mr. Seem covered the subject of automatic control of many electrically operated machines now playing a big part in economic mining and preparation of coal. Modernization, lower operating costs, greater safety and more successful maintenance, he showed, depended largely upon the use of automatic equipment. Today the ability of automatic control equipment to reduce idle time, quickly restore interrupted service, provide highly satisfactory operation and reduce maintenance costs justified serious consideration of its selection even if a workman located near the equipment and tending other duties were available.

Automatic equipment almost invariably reduces labor costs at the rate of about $1,700 per year per man; obviously, where three shifts per twenty-four hours are necessary, as with fan equipment, the saving is considerably larger.

The principal operations which now lend themselves to automatic electric control are power-converting equipment, pumps, fans, hoists, circuit breakers, boiler-plant equipment, air compressors, conveyors, dumps, etc. In 1921 the first automatic power-converting substation was installed. This outfit is still giving good service though many control features are now performed more simply in the latest type outfits.

Nab Men Recruiting Labor For Pittsburgh Coal Co. Without $5,000 License

Mike Deleta and E. E. Nickerson were arrested in Charleston, W. Va., last week charged with recruiting mine labor to be transported out of the state in violation of a recently enacted state law prohibiting the operation of a labor agency without a state license, which costs $5,000 a year. The arrests were made on warrants issued on complaint of William Blizzard, formerly an official of district 17, United Mine Workers. Both were released under bonds of $500 each for a hearing on June 8.

The offense is ranked as a misdemeanor and the penalty is fixed at from $100 to $500 fine or from 30 days to six months in jail, or both. The state tax commissioner has announced that no such licenses have been issued.

Deleta and Nickerson particularly are accused of recruiting miners in the vicinity of Charleston and transporting them to Pittsburgh for the Pittsburgh Coal Co. Transportation was arranged, it is claimed, through C. M. O'Neal, federal-state employment examiner, against whom, it is reported, complaints have been lodged with the Governor of the state and James J. Davis, Secretary of Labor.

When the labor-agency license bill was presented in the Legislature it was warmly supported by the coal operators and what is left of the mine union. It was probably the first time in the industrial history of West Virginia that these opposing forces found themselves in alliance. The coal operators wanted a law to hamper the operation of labor agents who had been luring their miners away to other states. The mine union, particularly the international organization, welcomed any bar to the influx of West Virginia "strike breakers" into the union fields of other states.

News Items From Field and Trade

INDIANA

Miners who have been employed at the Somerville mines of the Consolidated Fuel Corporation, near Princeton, are filing labor liens with the County Recorder. The liens are to protect the pay of the men for the latter half of March, aggregating nearly $50,000. The liens are against the corporation and the newly named receiver, Alfred Ogle of Terre Haute.

The Sunlight Coal Co. at Boonville will resume operations at its strip mines in Warrick County about July 1. The company has leased several hundred acres of coal lands in Warrick County during the past year.

KENTUCKY

Charles Schuler, coal operator of Davenport, Iowa, and associates, operating mines in Iowa and Illinois, has purchased the Sixth Vein Coal Co., on the Illinois Central R.R., near Madisonville, from H. H. Coil, Tom Logan and W. E. Carroll. The plant has a capacity of about 100 tons a day, but is to be enlarged for increased production.

Governor Fields recently named Charles Gorman, of Louisville, as labor representative of the Kentucky Workmen's Compensation Board to succeed Thomas S. Rhea, of Russellville, resigned. Gorman is affiliated with the American Federation of Labor.

The Rogers Coal Co., Bevier, is preparing to rebuild the portion of its power house recently destroyed by fire, with loss reported at $20,000.

MINNESOTA

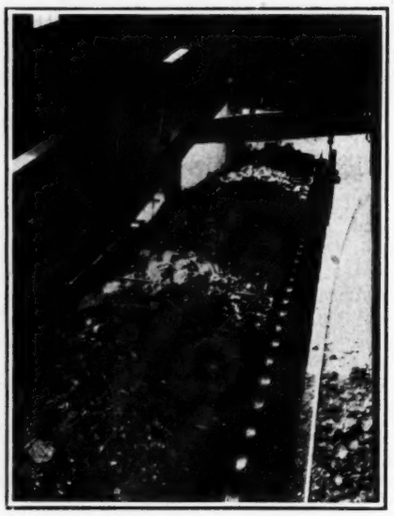
The Pursglove Coal & Dock Co. has discontinued operating the Northern Pacific R.R. coal dock at Superior for the handling of Pursglove coal. The company will handle its tonnage over another dock, it has been announced.

OHIO

Inspectors To Learn New Duties.—The State Mining Department, of which Jerome Watson is chief inspector, has called a meeting of all deputy inspectors to meet in Columbus for a conference the week of June 20 to acquaint the deputies with provisions of the new law passed by the recent session of the General Assembly. The new law puts additional duties on deputy inspectors, principally in giving examinations for mine and fire bosses, more rigid inspection of electrical machinery and equipment and the supervision of rock-dusting.

PENNSYLVANIA

Burke Opposes Cappellini.—Rinaldo Cappellini, who is seeking re-election as president of district 1, United Mine Workers, in the biennial election on June 9 will be opposed by Thomas Burke, of Miners Mills. George Isaacs and Michael Kosik are the candidates for vice-president; Enoch Williams, of Taylor, and Walter Harris, of Parsons, for secretary-treasurer; John Boylan, James Gleason and John Kmetz, district inspectors, are unopposed. John Ruane, incumbent; August Lippi and William J. Cotter, are in the field for inspector of the Third district, and Dennis Brislin, Alex Campbell and George Evans are after the office of international board member.



Mine-Run Starting for Market

Loading boom of the Rogers Elkhorn Coal Co., Virgie, Pike County, Ky. The boom, which is loaded with run of mine, has been raised to allow dropping into an empty.

A new miners' hall is being erected at Cramer, near Sykesville, by Cramer local, United Mine Workers, for use of the organization and probably for community gatherings. It is a one-story frame structure, 30x48 ft. in size.

P. C. & C. Has April Deficit.—The Pennsylvania Coal & Coke Corporation reports a deficit of $35,177 for April, after interest, depreciation and depletion but before federal taxes, comparing with a deficit of $56,965 for the same month of 1926. Gross earnings were $376,102, against $396,601, and the net operating loss was $16,352, against $32,071. For the first four months of 1927, net income amounted to $184,316 before federal taxes, comparing with a net loss of $77,170 in the same period last year. Gross revenue was $2,457,291 for the period, against $2,242,860, and net operating income was $266,613, against $20,858 a year ago.

The State Supreme Court has just ruled in favor of the Northumberland County Commissioners as to the right of its engineers to enter the mines of the Philadelphia & Reading company for the purpose of determining the value and amount of unmined coal. The case dated from the time the County Commissioners placed a higher valuation on coal holdings in the county. The company took an appeal from this valuation and the commissioners then ordered their engineers to enter the mines. The protest of the coal company followed.

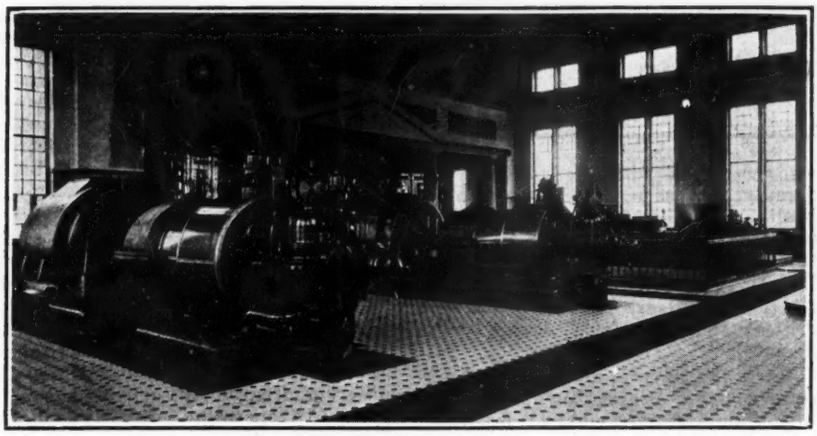
West End Mines Down Indefinitely.—As a result of 1,300 employees of operations of the West End Coal Co. in the Mocanaqua region going on strike the company has posted notices at the properties announcing that no attempt is to be made to run the mines for an indefinite period. The company has ordered the miners to remove their tools from the mine. Most of the inhabitants of Lee, Glen Lyon and Mocanaqua depend on these mines for their wages and the suspension of work has caused more than a little worriment over the future.

To Abandon Essen Mine.—Because the Essen mine, near Bridgeville, has been worked out it will be abandoned by the Pittsburgh Coal Co. an announcement says. The company will continue to maintain the village of Essen with the miners working there being provided with jobs at the Mansfield mine, Carnegie. The Essen mine has been in operation for forty years.

Hazle Brook Breaker Burns.—Fire recently destroyed the breaker of the Hazle Brook Coal Co. at Girardville. It employed several hundred men. This breaker was formerly controlled by the Girard Estate but later was taken over by the Philadelphia & Reading Coal & Iron Co. It was then sold to the Hazle Brook company. The loss by fire is placed at $150,000.

UTAH

Association Gains Supporters.—Although the Coal Operators' Association of Utah is still in a formative stage, progress is being made and those



Modern Power Plant in Ruhr Coal Mine

This view of the power house of the Hagenbeck mine, in the Ruhr coal field, operated and controlled by the Hugo Stinnes Industries, Inc., clearly indicates the efficiency and orderliness which prevail at its properties.

behind the movement are confident of its success. It is stated that some of the operators who were unfavorable to the movement at first are now giving it their indorsement. It is hoped that the association may have the effect of stabilizing the price of coal and making it lower to the consumer.

VIRGINIA

British Party at Pocahontas Mines.—The visiting party of British industrialists, 60 strong, inspected the mines of the Pocahontas Fuel Co., at Pocahontas, last week and were the guests of operators at Bluefield, W. Va., for an elaborate program of entertainment. After a visit to the mines, the party went to Bluefield by automobile and were guests of the Pocahontas Coal Operators' Association and others at a luncheon and on a sightseeing trip about the city and that section of the state. The members of the British party were guests at a banquet at night at the West Virginia Hotel.

WEST VIRGINIA

When the property of the Guyan Valley Fuel Co. was offered recently at public sale by the receiver, Michael Barron, at Logan, no offers were made. A. S. L. Hopkins of Amherstdale, the newly appointed receiver, probably will be authorized to make an effort to dispose of the property at private sale. The order of sale was directed at the instance of A. D. Callihan, head of the company. The debts of the company, secured and unsecured, aggregate about $55,000.

Victoria Company to Reorganize.—The property of the Victoria Coal & Coke Co. at Caperton, in the Fayette field, has been sold. This property was bid in by the stockholders in the company and a new corporation is to be organized to succeed the old one, which will be dissolved. Certain minority stockholders wished to withdraw and hence the sale represented a friendly proceeding merely to permit a reorganization. The stockholders of the company reside to a great extent in Pennsylvania and New York.

The entire plant of the West Virginia Coal & Coke Co. at Rossmore in the Logan field was threatened with destruction by fire last week. As it was, the company store building, the home of Superintendent F. O. See and the clubhouse of the company were destroyed. Comparatively little merchandise or furniture was saved.

The capital stock of the South Fairmont Coal Co. has been reduced from $150,000 to $75,000, the Antler Coal Co., Fairmont, from $200,000 to $100,000, and the Glencoe Coal Co. from $200,000 to $5,000.

New coal companies launched in West Virginia in April were the Bennett Fuel Co. of Wheeling, with an authorized capital of 200 shares of no par value; Bralan Coal Co. of Clarksburg, with a capital stock of $25,000; Banner Winifrede Coal Co. of Nolan, with a capital stock of $50,000; Lincoln Coal Co. of Kingwood, with a capital stock of $100,000. Two non-resident corporations also organized in April were the Walker's New River Mining Co. of Brisbin, Pa., with a capital stock of $15,000, and the Black Diamond Coal, Oil & Gas Co. of Charleston, W. Va., with a capital stock of $200,000.

CANADA

April Coke Output Over Average.—Production of coke in Canada during April totaled 170,405 net tons. This output, while slightly under the 171,894 tons reported for the previous month, compares favorably with the record of 176,445 tons in January, which was the greatest tonnage reported for any month since the commencement of monthly coke statistics in 1925. In April of a year ago, coke production was 149,357 tons. For the first four months of the year production totaled 676,992 tons, while the producers disposed of 683,101 tons. During the corresponding period of last year production totaled 623,549 tons and the disposition amounted to 634,362 tons.

British Hard-Coal Receipts Heavy.—Heavy shipments of Welsh and Scotch anthracite have been received at Montreal. Since the opening of navigation until May 21 over 100,000 tons had been unloaded, which is only about 2,000 tons less than the amount imported during the whole of last season. It is expected that the total shipment this year will be over 1,000,000 tons. In addition to the shipments of hard coal from Britain, consignments have been received of British bituminous to the amount of 9,257 tons and 1,206 tons of coke.

Inverness Report Ready.—A majority report by the conciliation board appointed by Peter Heenan, Minister of Labor, to consider a dispute between the Inverness Coal Co. of Nova Scotia and certain of its miners recommends that non-members of the United Mine Workers be allowed to return to work at the company's mines immediately, "without any condition of union affiliation attached." It also is proposed that a referendum be held among the miners in three months' time, "and that the organization receiving the majority of votes be the only organization recognized in Inverness and that the minority fall in with the majority." A minority report recommending "immediate fusion of both organizations" in the United Mine Workers is being forwarded by the representative on the board for the company, R. S. McLellan, Sydney, N. S.

Alberta Rate Probe Near.—The long delayed investigation of the transportation costs of east-bound Alberta coal by the Railway Commission will commence at Ottawa on June 7. A protracted inquiry into the question of general freight rates which took precedence caused the delay.

An issue of $4,000,000 20-year first mortgage 5½ per cent bonds of the Montreal Coke & Mfg. Co. is being offered at par. The company is owned equally by the Montreal Light, Heat & Power Co. and the Koppers Co., Pittsburgh. The new company recently purchased a 70-acre plant site adjoining the gas plant of the Montreal Light, Heat & Power Co. at Ville La Salle and is constructing a coke and gas plant which will have an annual capacity of approximately 350,000 tons high-grade coke, 6.500,000,000 cu.ft. of gas and resultant byproducts.

Committee to Boost Alberta Coal.—A deputation from Alberta headed by Trade Commissioner Stutchley had an interview with Premier Ferguson on Ontario on May 25 with regard to the development of trade between the provinces. The Premier assured the deputation that his government would cooperate with that of Alberta for the organization of a national committee to promote interprovincial trade with special emphasis on the use of Alberta coal in the Eastern provinces. Commissioner Stutchley urged that a Toronto committee be appointed composed of representatives of the government, of the boards of trade and of the associated chambers of commerce for the purpose of creating and developing public opinion about internal trade.

Information has been received that the Advisory Board on Tariff and Taxation at Ottawa will not give consideration to any change in the Canadian import duty on coal before its September meeting. A Canadian coal importer gives it as his personal opinion that "the tariff is now as high as it is possible to make it and satisfy the manufacturing concerns of Ontario who are unable to use Canadian coal under any circumstances."

Among the Coal Men

Haven A. Requa, formerly sales manager of the Columbus Mining Co., has been appointed vice-president and general manager of the South Chicago Coal & Dock Co., effective June 1. The South Chicago company operates a large mine in southeastern Kentucky, is distributor for a number of other mines in that region as well as in West Virginia and also controls its own ships and operates a large modern coal dock at South Chicago. Mr. Requa began his coal career in 1911 as office boy with the United Coal Corporation, the producing unit of C. M. Moderwell & Co., with mines in Franklin County, Illinois. He rose steadily until he became assistant to the late H. E. Patrick, general sales agent of the Moderwell firm. When the United sold its mines to the Old Ben Coal Corporation Mr. Requa went with the new owners. In 1917, when A. L. Allais and Edward Allais took over the Columbus Mining Co., Mr. Requa joined them as sales manager and member of the board, which positions he retained until his resignation two weeks ago. Mr. Requa retains his interest in the old company, however, and continues on the board of directors.

Arthur S. Learoyd, manager of the New York office of Thorne, Neale & Co., resigned recently. His successor is **John K. Barber,** who has been appointed acting manager.

C. J. Goodyear, who was traffic manager of the old Pittsburgh Coal Producers' Association, is reported to have become associated with a West Virginia organization, making his headquarters at Charleston.

Colonel Tom Morgan, former president of the Cincinnati Coal Exchange and sales manager for the Richvein Coal Co., is out again after four months of desperate illness, his family having several times given up all hope for his recovery.

J. H. Abbott has relinquished his post as tidewater sales agent of the Delaware, Lackawanna & Western Coal Co. after forty-seven years of continuous service. **Fred O. Parsons** has been appointed to succeed him.

George C. Coughlin, Philadelphia sales manager for the Reading company, is convalescing from a severe illness. Mr. Coughlin, who is very active despite his eighty-five years, is impatient to get back to his office.

J. W. Whatley, Birmingham, Ala., formerly manager of coal sales for the Tennessee Coal, Iron & Railroad Co. and the DeBardeleben Coal Corporation, is organizing a company to manufacture equipment for making powdered coal.

Nolan Mahan, president of the Cincinnati Coal Exchange and Western manager for the General Coal Co., Philadelphia, is at headquarters in the East going over matters of sales policy.

F. S. Gibson has succeeded A. S. Fisher as sales manager of the Pittsburgh Coal Co. at Buffalo. The latter, who had been with the company for many years, has resigned because of ill health. Mr. Gibson comes from Pittsburgh, where he had charge of local sales for the company.

C. L. Pearce, Western sales manager for the Fort Dearborn Coal Co., is in a critical condition from double pneumonia.

Harry Yates, president of the Punxsutawney Coal Mining Co., has returned to Buffalo after a six weeks' European trip.

William H. Grady

William H. Grady, newly appointed general manager of operations of the West Virginia Coal & Coke Co., whose elevation was announced in *Coal Age* recently, was born close to a coal mine at Wanamie, Luzerne County, Pa., in 1880, and has scarcely ever been out of sight of a coal operation since. His experience in the operating end of the industry began as driver boy and he has filled various positions up to superintendent. He also was graduated from Lehigh University with the degree of Engineer of Mines and put his knowledge to use in various posts from rodman to chief engineer.

J. G. Butler, Western manager for the Central Pocahontas Coal Co. with headquarters in Cincinnati, is back at his desk after three weeks of suffering with sciatica.

H. H. Gardiner, president of the Pittsburgh & Shawmut Coal Co., is recuperating at his summer home at Cape Cod, Mass., after an illness of several weeks.

Jack James of Christopher, Ill., has been reappointed County Mine Inspector for Franklin County.

James Pierce, assistant to the president of the Buck Run Coal Co., near Pottsville, Pa., who has been in Russia for several months, sends word home that he has accepted a position with the Russion Government to take charge of the development of coal lands in that country. The contract will run for three years. Mr. Pierce sailed for Russia on May 15 to inspect Russian coal deposits and report on the possibilities of the Russian mining industry in general. It is understood that Mr. Pierce and other engineers discovered vast coal properties but found little equipment for profitable working of them.

Arthur Mackenzie has been elected vice-president and freight traffic manager of the Chicago, Rock Island & Pacific Ry.

O. S. Newton, general manager of the Sunday Creek Coal Co., was taken to a Columbus (Ohio) hospital May 21 suffering from an attack of appendicitis. An operation probably will be performed soon.

James J. Campbell, auditor and assistant secretary of the Carnegie Steel Co., who is well known to the Pittsburgh and Cleveland coal trade, has been made a vice-president of that company.

Obituary

Henry Bucher Swoope died at his home at Merion, Pa., May 21, from heart failure. Mr. Swoope owned extensive coal properties throughout Pennsylvania and was treasurer of the Middle Pennsylvania Coal Corporation and a director in the Kay Coal Mining Co., the Lamborn Company, the Ox Bow Coal Co. and the Phoenix Coal Co. Funeral services were held at Kerwinsville, Pa., May 24.

Publications Received

The Inflammation of Coal Dusts: The Effect of the Chemical Composition of the Dust, by T. N. Mason and R. V. Wheeler. Safety in Mines Research Board. Paper No. 33. Price 6d. net. Pp. 20; 6x9 in.; illustrated. H. M. Stationery Office, Adastral House, Kingsway, W.C.2, London, England.

A World-Wide Picture of Bituminous Coal Research. National Coal Association, Washington, D. C. Covers research activities of different organizations and individuals.

Association Activities

Round-table talks on problems relating to the handling of coal by retail dealers featured the annual convention of the **Oklahoma Retail Coal Merchants' Association** held at Oklahoma City on May 4. More than seventy-five dealers attended.

Members of the **West Kentucky Coal Bureau,** meeting at the Seelbach Hotel, Louisville, on May 10, were gratified with reports regarding the first month's results under the recently inaugurated credit checking plan. The scheme which is patterned after systems in use by operators in the Alabama and Williamson fields, checks up fair practices, and keeps a line on buyers who are constantly buying from other mines while leaving bills unpaid elsewhere. The Bureau will not meet again until fall.

Production And the Market

Consumer Indifference Features Soft-Coal Trade; Sales Largely Confined to Bargain Deals

Market developments in the bituminous coal industry of the United States are still characterized by the consumer indifference which has marked the situation since the suspension of mining in the Central Competitive Field and the Southwest two months ago. Many industrial users are relying solely upon the stockpiles accumulated prior to April 1; others are keeping up their storage reserves, or even increasing them, by picking up bargain lots of tonnage dumped on the market by over-enthusiastic or hard-pressed producers.

Weekly production, which holds a comfortable margin over the 8,000,000-ton mark, is too large for ready absorption by consuming interests who still carry heavy reserve stocks. As a result all the pressure to move tonnage comes from the producing end of the industry. Nowhere, perhaps, is this better illustrated than in the lake trade. The agencies in control of transportation of this traffic find it necessary to place embargoes for one, two, three or four days every week to hold back the flood of shipments which eager producers start toward the Lake Erie ports. During the week ended at 7 a.m., May 30, there were 1,222,991 net tons of cargo and 52,960 tons of vessel fuel dumped at the lower ports.

Spot Market Weak

Under such conditions the spot price situation naturally is weak. *Coal Age* Index of spot bituminous prices as of May 30 was 153 and the corresponding weighted average price was $1.86. Compared with the figures for the preceding week this was a decline of 1 point in the index, with no change in the price. Revised figures for May 16 were 155 and $1.88. As explained in the preceding issue, *Coal Age* Index figures have been revised back to April 11 to cover the shifts in production since the suspension in the Central Competitive Field. The figures for May 31, 1926, were 160 and $1.94, respectively.

Due principally to changes at Cincinnati, southeastern Kentucky price levels were a fraction higher last week. Pittsburgh, on the other hand, was weaker because of an easier market in steam mine-run. Central Pennsylvania quotations showed little change. Southern West Virginia low-volatiles gained a point as the result of increased demand through the Columbus gateway, but the high-volatiles were easier. Quotations on Illinois and Indiana prepared sizes were unchanged.

Production Shows Little Change

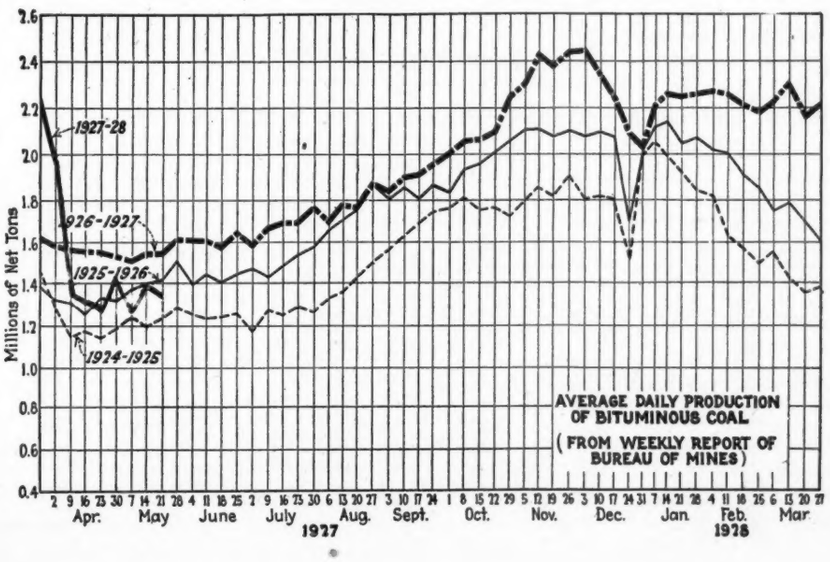
Bituminous output during the week ended May 21 was estimated by the U. S. Bureau of Mines at 8,273,000 net tons, or 129,000 tons less than during the preceding week. Loadings the first two days of last week were larger than for several weeks previous. While output in some of the smaller non-union districts has been declining, the rate of production in Indiana, Illinois and Ohio has been increasing. Kentucky is mining more coal than it did a year ago and the same thing is true of West Virginia.

Anthracite production the first three weeks of last month was 15 per cent higher than in April. Output the past two weeks, however, has decreased somewhat. Cumulative figures from Jan. 1 show the effects of the slump from which the industry has only partially recovered. The total to May 21 was 31,463,000 net tons, as compared with 25,206,000 tons in 1926, when approximately seven weeks were lost through the strike. The 1927 cumulative total is less than the figures for 1925, 1924 and 1923.

Better Demand for Anthracite

Spurred on principally by the knowledge that prices on domestic coals would be advanced June 1, there was a better demand for these sizes last week in New York and Middle Western markets. Philadelphia buying, on the other hand, was not up to expectations. Stove still leads in popularity with the general consumer and there is an active market on pea. Egg is less in demand than it was earlier in the season. The market on steam sizes is softer and practically every producer has some surplus buckwheat to move.

In the Connellsville beehive coke trade the smaller producers are wondering how they can realize costs of production from the prevailing spot quotations. Some, of course, are not pay-



Estimates of Production

(Net Tons)

BITUMINOUS

	1926	1927
May 7	9,039,000	8,185,000
May 14 (a)	9,299,000	8,402,000
May 21 (b)	9,282,000	8,273,000
Daily average	1,547,000	1,379,000
Cal. yr. to date (c)	213,241,000	229,485,000
Daily av. to date	1,779,000	1,914,000

ANTHRACITE

May 7	1,985,000	1,866,000
May 14 (a)	1,904,000	1,989,000
May 21 (b)	1,750,000	1,970,000
Cal. yr. to date (c)	25,206,000	31,463,000

BEEHIVE COKE

May 7	212,000	155,000
May 14 (a)	203,000	148,000
May 21 (b)	211,000	156,000
Cal. yr. to date (c)	5,534,000	3,669,000

(a) Revised since last report. (b) Subject to revision. (c) Adjusted to equalize number of days in the two years.

ing the standard rates of pay, and others may lower wages. The larger interests, however, seem averse to taking any such action—at least during the present month. Week by week the output of the ovens registers declines.

Midwestern Coals Inactive

Demand for Middle Western coals in the Chicago market is inactive. While practically all of the steam tonnage from southern and central Illinois and from the Fourth Vein Indiana fields has been cleaned up, all districts still carry unsold domestic sizes, and steam grades produced prior to April 1 can be had in the Mt. Olive and Standard districts. Illinois and Indiana mines which have reopened since April 1 find it difficult to dispose of their output.

Western Kentucky producers who anticipated a strong market have been sadly disappointed. Screenings are easy and bargains can be picked up in prepared sizes. Eastern Kentucky and the high-volatile fields of southern West Virginia fare little better in the Middle West, which is taking advantage, when it buys at all, of the fact that congestion at the lower lake ports is making the Southern operators struggle for all-rail business. Consumer demand is light.

The one exception to this general report of indifference is to be found in the market on prepared sizes of low-volatile coal. Only a small tonnage is offered for spot shipment and prices on smokeless lump and egg are moving upward. According to reports reaching Chicago, the smokeless fields are having so much trouble moving slack that production has been curtailed. The local situation in mine-run is unchanged. The bears in the market predict lower prices by the middle of the month.

Western Kentucky Competition Strong

Competition from western Kentucky is spoiling the hopes of the stripping operations in Illinois and Indiana, while southern Illinois shaft mines are holding a large number of domestic "no bills." The same situation prevails in the Duquoin and Jackson County fields. Most of the track coal has been moved out of the Mt. Olive district, but little ground-storage tonnage has been picked up. Unbilled loads in the Standard field are not disappearing rapidly. Ground accumulations are virtually untouched.

There is practically no call for coal for current consumption in the St. Louis market. Steam plants are not worrying and most of the retail distributors have comfortable stocks in their yards. Birmingham coke is now competing for local household trade. Country business, both steam and domestic, is quiet. Local wagonload steam buying is dropping off. Carload users wait until they find a soft spot before they take on any additional tonnage.

Although Kentucky interests have been endeavoring to hold prices more firmly in the Louisville market, quiet shading to move surplus coal is still

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	May 31 1926	May 16 1927	May 23 1927	May 30 1927†
Smokeless lump	Columbus	$3.10	$3.35	$3.60	*$3.25@$3.75*
Smokeless mine-run	Columbus	2.05	2.20	2.20	**2.10@ 2.40**
Smokeless screenings	Columbus	1.25	1.10	1.10	1.00@ 1.25
Smokeless lump	Chicago	3.10	3.35	3.35	3.25@ 3.50
Smokeless mine-run	Chicago	2.00	1.90	1.90	1.80@ 2.00
Smokeless lump	Cincinnati	3.00	3.50	3.35	**3.25@ 3.75**
Smokeless mine-run	Cincinnati	1.85	2.25	2.25	2.25
Smokeless screenings	Cincinnati	1.35	1.85	1.85	1.75@ 2.00
*Smokeless mine-run	Boston	4.65	4.40	4.40	4.35@ 4.50
Clearfield mine-run	Boston	1.80	1.70	1.70	1.60@ 1.85
Cambria mine-run	Boston	2.10	2.05	2.05	**1.90@ 2.25**
Somerset mine-run	Boston	2.00	1.85	1.85	1.75@ 2.00
Pool 1 (Navy Standard)	New York	2.60	2.75	2.75	2.50@ 3.00
Pool 1 (Navy Standard)	Philadelphia	2.65	2.85	2.85	*2.70@ 2.95*
Pool 1 (Navy Standard)	Baltimore	2.00	2.15	2.15	2.10@ 2.25
Pool 9 (Super. Low Vol.)	New York	2.05	2.05	2.05	1.90@ 2.25
Pool 9 (Super. Low Vol.)	Philadelphia	2.10	2.15	2.15	*1.85@ 2.25*
Pool 9 (Super. Low Vol.)	Baltimore	1.80	1.80	1.80	1.75@ 1.85
Pool 10 (H.Gr.Low Vol.)	New York	1.85	1.75	1.75	1.65@ 1.90
Pool 10 (H.Gr.Low Vol.)	Philadelphia	1.85	1.80	1.80	*1.65@ 1.90*
Pool 10 (H.Gr.Low Vol.)	Baltimore	1.65	1.65	1.65	1.60@ 1.70
Pool 11 (Low Vol.)	New York	1.65	1.60	1.60	1.50@ 1.75
Pool 11 (Low Vol.)	Philadelphia	1.55	1.65	1.65	*1.50@ 1.70*
Pool 11 (Low Vol.)	Baltimore	1.60	1.55	1.55	1.50@ 1.60
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.40	1.45	1.45	1.35@ 1.60
Pool 54-64 (Gas and St.)	Philadelphia	1.45	1.45	1.45	1.35@ 1.60
Pool 54-64 (Gas and St.)	Baltimore	1.40	1.50	1.50	1.45@ 1.55
Pittsburgh sc'd gas	Pittsburgh	2.25	2.50	2.50	2.40@ 2.60
Pittsburgh gas mine-run	Pittsburgh	2.00	2.20	2.20	2.15@ 2.25
Pittsburgh mine-run (St.)	Pittsburgh	1.80	2.10	2.10	*2.00@ 2.10*
Pittsburgh slack (Gas)	Pittsburgh	1.35	1.50	1.50	1.45@ 1.60
Kanawha lump	Columbus	2.05	2.35	2.35	2.25@ 2.50
Kanawha mine-run	Columbus	1.55	1.60	1.60	*1.35@ 1.50*
Kanawha screenings	Columbus	.95	1.25	1.25	*1.10@ 1.25*
W. Va. lump	Cincinnati	2.10	2.10	2.10	1.75@ 2.50
W. Va. gas mine-run	Cincinnati	1.50	1.60	1.60	1.50@ 1.75
W. Va. steam mine-run	Cincinnati	1.35	1.40	1.35	**1.35@ 1.50**
W. Va. screenings	Cincinnati	1.05	1.20	1.15	**1.10@ 1.35**
Hocking lump	Columbus	2.35	2.25	2.25	2.00@ 2.50
Hocking mine-run	Columbus	1.55	1.85	1.85	*1.75@ 1.90*
Hocking screenings	Columbus	1.10	1.30	1.25	**1.25@ 1.40**
Pitts. No. 8 lump	Cleveland	2.15	‡	‡	‡
Pitts. No. 8 mine-run	Cleveland	1.70	‡	‡	‡
Pitts. No. 8 screenings	Cleveland	1.30	‡	‡	‡

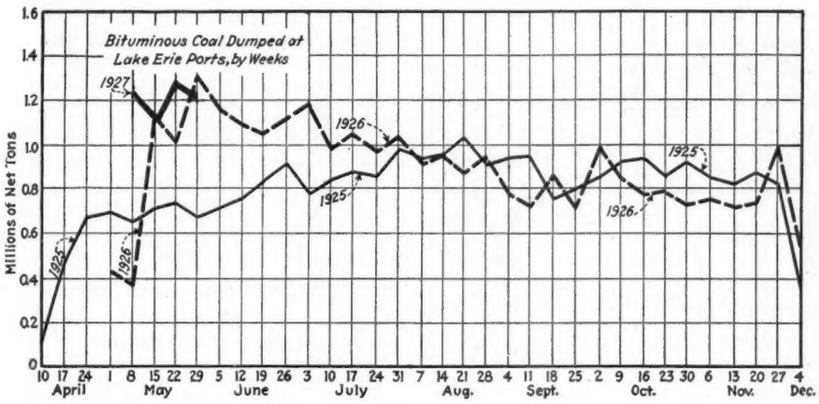
Midwest	Market Quoted	May 31 1926	May 16 1927	May 23 1927	May 30 1927†
Franklin, Ill. lump	Chicago	$2.60	$3.15	$3.15	$3.15
Franklin, Ill. mine-run	Chicago	2.40	‡	‡	‡
Franklin, Ill. screenings	Chicago	1.90	‡	‡	‡
Central, Ill. lump	Chicago	2.30	2.85	2.85	2.75@ 3.00
Central, Ill. mine-run	Chicago	2.05	‡	‡	‡
Central, Ill. screenings	Chicago	1.75	‡	‡	‡
Ind. 4th Vein lump	Chicago	2.40	3.05	3.05	3.00@ 3.15
Ind. 4th Vein mine-run	Chicago	2.15	‡	‡	‡
Ind. 4th Vein screenings	Chicago	1.80	‡	‡	‡
Ind. 5th Vein lump	Chicago	2.15	2.65	2.65	2.60@ 2.75
Ind. 5th Vein mine-run	Chicago	1.95	2.10	2.10	2.00@ 2.25
Ind. 5th Vein screenings	Chicago	1.35	1.90	1.90	1.85@ 2.00
Mt. Olive lump	St. Louis	2.35	3.00	3.00	3.00
Mt. Olive mine-run	St. Louis	2.15	3.00	3.00	3.00
Mt. Olive screenings	St. Louis	1.55	2.00	2.00	2.00
Standard lump	St. Louis	2.25	2.75	2.75	2.75
Standard mine-run	St. Louis	1.80	2.00	2.00	2.00
Standard screenings	St. Louis	1.30	1.75	1.75	1.75
West Ky. block	Louisville	1.75	1.90	1.85	1.75@ 2.00
West Ky. mine-run	Louisville	1.20	1.60	1.50	1.40@ 1.60
West Ky. screenings	Louisville	1.10	1.60	1.50	1.40@ 1.60
West Ky. block	Chicago	1.75	1.65	1.65	1.60@ 1.75
West Ky. mine-run	Chicago	1.15	1.45	1.40	1.35@ 1.45
South and Southwest					
Big Seam lump	Birmingham	2.30	2.15	2.15	1.90@ 2.40
Big Seam mine-run	Birmingham	2.00	1.70	1.70	1.50@ 1.90
Big Seam (washed)	Birmingham	2.00	1.85	1.85	1.75@ 2.00
S. E Ky. block	Chicago	2.40	1.70	2.20	2.10@ 2.35
S. E. Ky. mine-run	Chicago	1.65	1.50	1.50	1.40@ 1.65
S. E. Ky. block	Louisville	2.00	2.25	2.25	2.00@ 2.50
S. E. Ky. mine-run	Louisville	1.35	1.60	1.60	*1.40@ 1.75*
S. E. Ky screenings	Louisville	1.15	1.35	1.20	1.10@ 1.35
S. E. Ky. block	Cincinnati	2.15	2.35	2.05	**1.75@ 2.50**
S. E. Ky. mine-run	Cincinnati	1.50	1.60	1.55	**1.35@ 1.75**
S. E. Ky. screenings	Cincinnati	1.05	1.25	1.15	**1.00@ 1.40**
Kansas lump	Kansas City	4.00	4.35	4.35	4.25@ 4.50
Kansas mine-run	Kansas City	3.00	2.85	2.85	2.75@ 3.00
Kansas screenings	Kansas City	2.50	2.50	2.50	2.50

*Gross tons, f.o.b. vessel, Hampton Roads.
†Advances over previous week shown in **heavy type**; declines in *italics*.
‡Quotations withdrawn because of strike.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	May 31, 1926 Independent	May 31, 1926 Company	May 23, 1927 Independent	May 23, 1927 Company	May 30, 1927† Independent	May 30, 1927† Company
Broken	New York	$2.34	.....	$8.25@$9.25	.....	$8.25@$8.50	.....	$8.25@$8.50
Broken	Philadelphia	2.39	$9.25	9.00@ 9.25	.....	8.25@ 8.50	.....	8.25@ 8.50
Egg	New York	2.34	8.75@ 9.25	8.75@ 9.25	$8.25@$8.50	8.25@ 8.35	$8.25@$8.50	8.25@ 8.35
Egg	Philadelphia	2.39	9.25@ 9.75	9.15@ 9.25	8.25@ 9.00	8.25@ 8.35	8.25@ 9.00	8.25@ 8.35
Egg	Chicago*	5.06	8.48	8.13	7.63	7.63	7.63	7.63
Stove	New York	2.34	9.25@ 9.75	9.25@ 9.50	8.60@ 8.95	8.75@ 8.95	8.60@ 8.95	8.75@ 8.95
Stove	Philadelphia	2.39	9.60@10.00	9.35@ 9.50	8.85@ 9.50	8.85	8.85@ 9.50	8.85
Stove	Chicago*	5.06	8.84	8.33@ 8.58	8.08	8.08	8.08	8.08
Chestnut	New York	2.34	8.75@ 9.25	8.75@ 9.15	8.25@ 8.50	8.25@ 8.35	8.25@ 8.50	8.25@ 8.35
Chestnut	Philadelphia	2.39	9.25@ 9.50	9.00@ 9.15	8.25@ 9.00	8.25@ 8.35	8.25@ 9.00	8.25@ 8.35
Chestnut	Chicago*	5.06	8.71	8.38@ 8.50	7.63	7.63	7.63	7.63
Pea	New York	2.22	6.25@ 7.00	6.00@ 6.25	5.50@ 6.50	6.00@ 6.50	5.50@ 6.50	6.00@ 6.50
Pea	Philadelphia	2.14	6.50@ 7.00	6.00@ 6.50	6.00@ 6.75	6.00	6.00@ 6.75	6.00
Pea	Chicago*	4.79	6.03	5.65@ 5.80	6.10	6.10	6.10	6.10
Buckwheat No. 1	New York	2.22	1.70@ 2.35	3.00@ 3.50	2.50@ 2.75	2.50@ 3.00‡	*2.35@ 2.75*	2.50@3.00‡
Buckwheat No. 1	Philadelphia	2.14	2.00@ 2.50	2.50@ 2.75	2.50@ 3.00	2.50	2.50@ 3.00	2.50
Rice	New York	2.22	1.50@ 1.85	2.00@ 2.25	1.60@ 2.00	2.00@ 2.25	*1.60@ 1.90*	2.00@ 2.25
Rice	Philadelphia	2.14	1.75@ 2.25	2.00@ 2.25	2.00@ 2.75	2.00@ 2.25	2.00@ 2.75	2.00@ 2.25
Barley	New York	2.22	1.20@ 1.50	1.50@ 1.75	1.20@ 1.50	1.50@ 1.75	*1.15@ 1.45*	1.50@ 1.75
Barley	Philadelphia	2.14	1.50@ 1.60	1.75	1.50@ 1.75	1.50	1.50@ 1.75	1.50
Birdseye	New York	2.22	1.30@ 1.60	2.00	1.40@ 1.60	.....	1.40@ 1.60	.....

*Net tons, f.o.b. mines. † Advances over previous week shown in **heavy type**; declines in *italics*. ‡Domestic buckwheat (D. L. & W.), $3.50



the order of the day. Eastern Kentucky mine-run has been openly quoted as low as $1.40, but the range on other sizes from both parts of the state is nominally unchanged. Farther up the river, at Cincinnati, eastern Kentucky quotations have advanced. Louisville retail prices on both eastern and western Kentucky coals are up 50c.

Head of the Lakes Busy

Shipments from the docks at the Head of the Lakes are well maintained. Stocks accumulate slowly despite the heavy run of receipts from the lower lake ports. Cargoes are given prompt discharge. During the week ended May 21 there were 58 cargoes, including 2 of anthracite, unloaded at Superior and Duluth and 27 more loaded with bituminous were reported en route. The slowing up in the run of hard coal to the docks is attributed to the fact that interests there now have a liberal assortment of sizes and are waiting the development of a more active retail demand.

The outstanding feature on the bituminous side of the trade has been the disposition of an increasing number of large consumers to contract for their season's requirements. For their part, dock men are much more inclined to enter into firm commitments than they were a few weeks ago. Prices on both anthracite and bituminous are firm. Splint coals are moving in heavier volume because of the reduction in the tonnage of Hocking. A liberal run of smokeless is promised.

The June 1 advance of 25c. in prices on anthracite added a little impetus to buying in the Twin Cities last week, but the total volume of coal moved to the consumer was small. Steam business is expanding slowly as most industrial users are adding a little to their stockpiles. Smokeless holds the center of the stage in the Milwaukee market. Anthracite also moved more freely last week in anticipation of the advance which went into effect yesterday. The new prices are $16.40 for stove and $15.95 for egg and nut, chute delivery.

Arkansas Prices Advanced

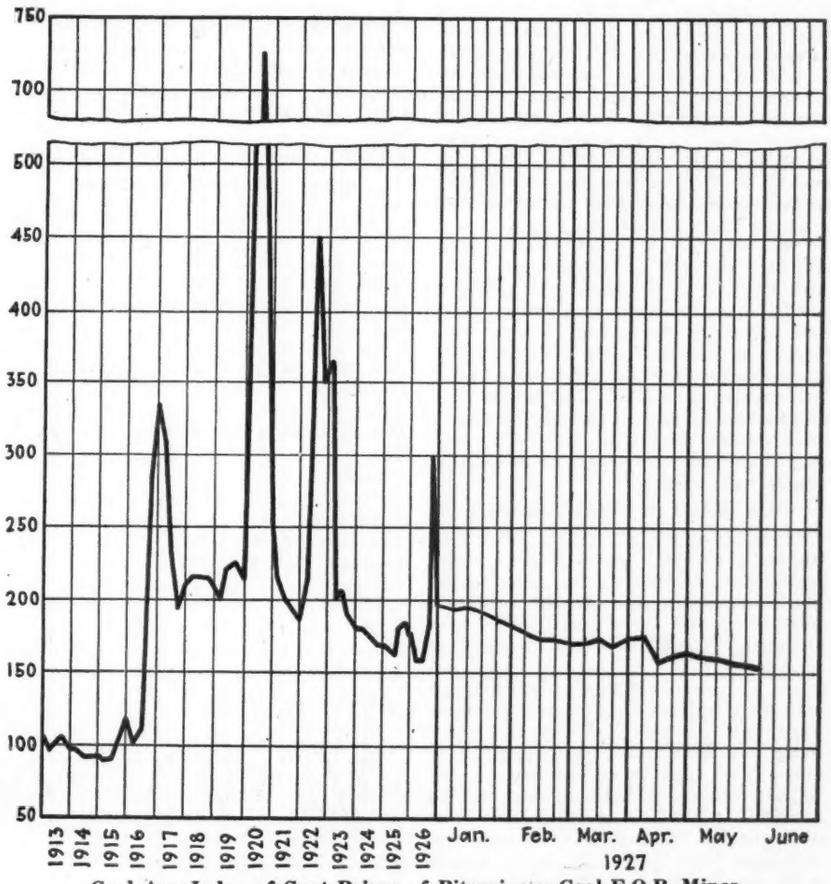
June prices on Bernice, Arkansas, coals show an advance of 30c. over May quotations. Grate is now $7.10; egg, $7.35; chestnut, $5.85 and No. 4, $9.10. Paris lump is $5.25, an increase of 25c. Aside from these changes the Southwestern market is dull. Oklahoma mines are running at a fairly liberal rate, due to the placing of some railroad contracts. Production in Kansas is confined to a few stripping operations and local banks; other mines in the state are down as a result of the labor dispute.

There has been a slight increase in demand for nut and steam sizes in Colorado, but domestic lump is still backward and "no bills" are increasing. Mines are averaging about half-time. Effective June 1 Walsenburg and Canon City lump was advanced to $4.50; nut, $4.25; washed chestnut, $3; Trinidad lump and nut, $3.25; chestnut, $3; northern lignite lump, $3@$4, according to grade; Crested Butte anthracite, $8.75 for furnace and base-burner sizes and $8.25 for egg. Kemmerer-Rock Springs lump is $4.25; nut, $3.75. Slack from both Colorado and Wyoming fields is offered at $1.25.

Utah mines are running about 2½ days a week. Industries are purchasing little coal and some operators are dumping their slack. Prices, however, are firm, and there seems to be little likelihood that further reductions will be made this summer. Salt Lake City retail prices were reduced several days ago to spur domestic buying. All sizes larger than nut have been cut to $8, with an additional discount of 50c. for cash. This was a total slash of $1.50. Coming at a time when another cold snap increased demand for current consumption, it has resulted in a small flurry.

Smokeless Circulars Unchanged

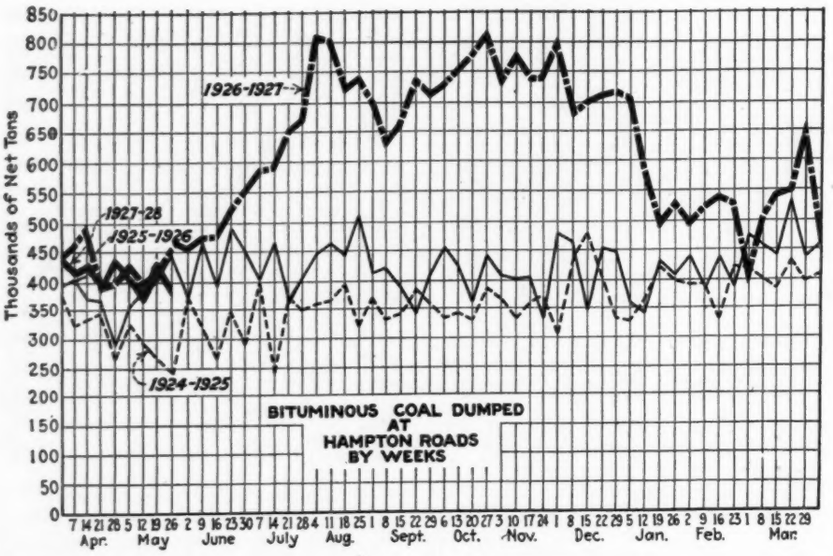
Announcement of June circulars on smokeless coal at Cincinnati last week showed no change from the May basis of $3.25 for lump and egg and $2.25 for mine-run. Stove, which had been moving inland at $2.50@$3, was put on the same basis as lump and egg. Spot sales of lump and egg are made at $3.25@$3.75. Slack, however, is



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1927				1926	1925
	May 30	May 23	May 16*	May 9*	May 31	June 1
Index	153	154	155	157	160	162
Weighted average price	$1.86	$1.86	$1.88	$1.90	$1.94	$1.96

This diagram normally shows the relative, not the actual, price on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportion each of slack, prepared and run of mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board. Owing to the suspension of operations in certain unionized fields the figures since April 2 have been reweighted to cover present-day tonnage. Figures for May 23 and 30 are *tentative* only. *Revised.



Car Loadings and Supply

	Cars Loaded — All Cars	Coal Cars
Week ended May 14, 1927.....	1,029,126	163,150
Week ended May 7, 1927.....	1,024,416	156,668
Week ended May 15, 1926.....	1,030,162	167,673
Week ended May 8, 1926.....	996,527	162,453

	Surplus Cars — All Cars	Coal Cars	Car Shortages — All Cars	Coal Cars
May 8, 1927...	245,113	82,395	.....	.....
April 30, 1927..	259,736	90,075	.....	.....
May 8, 1926...	270,385	105,108	.....	.....

weak—largely, it is claimed, because embargoes against further shipments to the lakes forced producers to make an intensive canvass of inland all-rail markets.

The embargoes against the roads south of the Ohio River, however, had a still greater effect upon high-volatile coals. Contrary to expectations, however, the forced shifting of tonnage to all-rail markets did not result in depressed prices because inland buyers, who had been out of the market for several days, were in a position to take on more coal. If anything, the general level of quotations the end of May were stronger as most of the low-priced mine-run was out of the way.

The number of coal loads interchanged through the Cincinnati gateway last week was 16,016, an increase of 346 cars over the preceding week and 1,203 cars more than a year ago. The total included 4,184 loads en route to the lakes, as compared with 4,378 the preceding week. The number of empties en route to the mines increased from 14,806 to 15,734 cars. The biggest gain was by the Chesapeake & Ohio—1,411 cars.

Ohio Steam Markets Lethargic

Steam business in central Ohio continues quiet and featureless. Many consumers are drawing upon stockpiles. Spot purchases are limited although screenings are somewhat stronger. Domestic demand, on the other hand, is unusually brisk for this season of the year. Wholesale prices on splints and smokeless in the Columbus market have advanced 25 to 50c. Retail prices are firm, but have not been increased to cover the higher quotations at the mines. There is little active demand for Ohio coals for domestic purposes.

Industrial plants in eastern and northern Ohio are still well stocked with coal and show little interest in the spot market. Small quantities of No. 8 lump are still available at $2@$2.60; mine-run, $1.60@$1.70 and screenings, $1.20@$1.25. Middle District slack is $1.60; lump, $2.35@$2.60. No. 8 strip-pit screenings can be bought for $1.20@$1.25. All these quotations are below the prices current prior to April 1. Smokeless lump and egg are strong at $3.50@$3.75, but buying is not heavy.

Although demand in the Pittsburgh district was slightly stronger last week, increased buying had no effect upon quotations on western Pennsylvania and northern West Virginia offerings. Some strip-pit coal is seeking the market at prices 20c. or more per ton under the quotations on shaft-mined coal. Central Pennsylvania production the week ended May 21 was 12,447 cars, as compared with 12,714 cars the week preceding. Current quotations are: Pool 1, $2.40@$2.60; pool 71, $2.20@$2.30; pool 9, $2@$2.15; pool 10, $1.75@$1.85; pools 11 and 18, $1.65@$1.70.

Dullness Rules Buffalo Trade

Unrelieved dullness rules the Buffalo bituminous trade. Inquiry is extremely small and current offerings of tonnage more than cover requirements. Prices are easy. Fairmont slack is $1.25@$1.35; Youghiogheny slack is held at $1.55 by most shippers. There is an increasing amount of Pittsburgh district steam coal on the market, with three-quarter lump quoted at $1.90@$2.10. Domestic coke is moving better, but the market for commercial coke is sluggish.

The New England steam coal market continues quiet, but prices are somewhat firmer because producers are exercising better control over output. Distress sales are infrequent and concessions are disappearing. Although stray lots of Navy Standard can be picked up at $4.35@$4.40 per gross ton, f.o.b. vessels at Hampton Roads, the ruling price is $4.50 and there are reports that some tonnage has changed hands at $4.55.

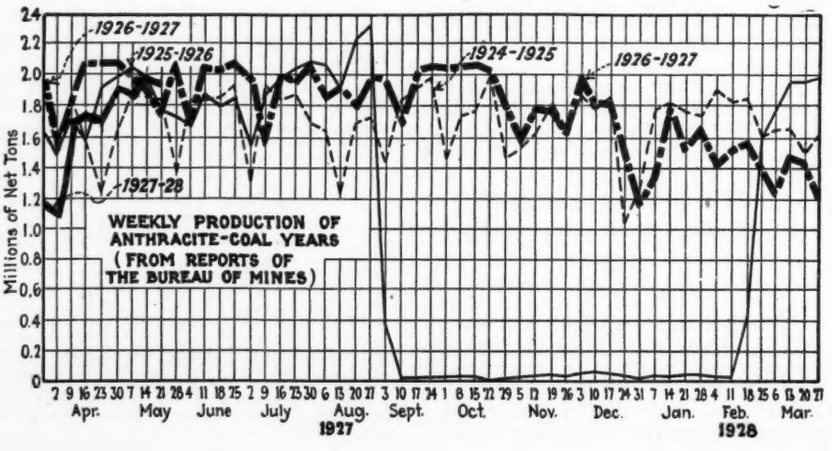
For inland delivery, shippers are asking $4.65@$4.75 on cars at Boston and $4.50@$4.60 at Providence. These quotations represent an increase of 10c. over the prevailing offers a fortnight ago. There has been no material change in the situation with respect to all-rail coals from central Pennsylvania. Prices on this tonnage are low and probably represent little over the actual cost of production.

More Interest in New York Market

If inquiries counted, it could be said that the New York market is "looking up." Consumers show more interest—but are not backing their interest with new orders. As a result, free coals are not moving freely and the backbone of the market is in the contract shipments. Sellers are urging consumers to keep stockpiles intact as insurance against unfavorable developments in the labor situation. This advice, however, is not always followed.

Philadelphia reports a few isolated instances where buyers have added to their storage stocks, but this movement has not become general. As a matter of fact, quotations at the end of the week were weaker except in the case of high-volatile coals. Baltimore still marks time and consumers generally ignore warnings against depleting stockpiles. Competition for spot business is keen, but producers are talking higher prices on long-term contracts. The export trade is flat and this, it is felt, helps to hold down quotations on home business.

The Birmingham district still suffers from a decided slump in the demand for all grades of coal. Spot buying of industrial fuel is at a low ebb and no new inquiries have been received as a result of the suspension in the Central Competitive Field. Only a sharp curtailment in production is preventing a glut



of domestic sizes as retail buying is considerably below normal. Alabama tonnage has been decreasing steadily since the beginning of April. The price situation is unchanged.

The New York market was an active buyer of domestic anthracite last week. Retail dealers increased their yard supplies in anticipation of advances of 10 to 25c. in wholesale prices yesterday. In some cases they also were able to persuade the householder to take in his winter's supply, but the success in that direction was not abnormal. June orders are backward, with egg the slowest moving domestic size. Steam grades also are meeting with greater sales resistance.

Conditions in the Philadelphia trade were less favorable last week. Not only did all shippers report a surplus of steam sizes, but the volume of domestic orders also fell below expectations. Stove and egg led in demand, but the latter size had lost some of its strength. Nut also was firm and the market was ready to absorb more pea than shippers could offer. Retailers blamed the weather for the failure of the householders to take hold and place fill-up orders.

The Baltimore anthracite market is featureless. Retail stocks are ample and consumer buying is light. Forehanded consumers helped the movement at Buffalo last week with orders placed in anticipation of the June 1 advances in prices. May business as a whole, however, was not up to expectations. During the week ended May 21 there were 41,600 tons loaded for the lakes. This included the first cargo of the season for Fort William.

Spot Prices Below Oven Costs

The situation in the spot coke market is hitting Connellsville ovens a hard blow. Cost of production at the $6 wage scale is estimated as close to $3.50, which was the price at which most of the second-quarter contract business was closed. Spot furnace tonnage, however, is bringing only $2.85 @$3. Some of the smaller producers are paying lower wages and others are disposed to cut, but the larger interests do not seem inclined to take such action—at least not for another month. Spot foundry is $4@$4.75, with buying light.

Production of beehive coke in the Connellsville and Lower Connellsville region during the week ended May 21 was 102,250 net tons, according to the Connellsville *Courier*. Furnace-oven output was 60,800 tons, a decrease of 6,100 tons, when compared with the preceding week. Merchant-oven output was 41,450 tons, a decline of 510 tons. Merchant ovens are producing only 60 per cent of their average March outturn.

Coal Age Index Revised

In order to make *Coal Age* figures on spot prices accurately reflect the changed conditions brought about by the suspension of mining March 31 at the majority of operations in the Central Competitive Field, *Coal Age* Index of spot bituminous prices and weighted average prices have been revised and reweighted on the basis of current production.

A tentative price and index is published each week. This is based on the latest available production data. The indices thus arrived at are revised two weeks later when actual production data for the earlier weeks are available. The figures since April 11, the first date upon which a revision was made, are as follows:

	Index	Price
April 11	155	$1.87
April 18	155	1.87
April 25	157	1.90
May 2	158	1.91
May 9	157	1.90
May 16	155	1.88
May 23	154*	1.86*
May 30	153*	1.86*

*Preliminary figures

Soft-Coal Exports Increase

Exports of bituminous coal from the United States in April totaled 1,258,298 gross tons. In April, 1926, the total was 1,094,247 tons and in March of this year 1,376,001 tons. Anthracite exports dropped from 294,802 tons in April, 1926, to 200,771 tons in April, 1927; the total in March, 1927, however, was only 156,028 tons.

Exports in gross tons, by countries, were as follows in April, 1927:

To	Anthracite	Bituminous	Coke
Denmark and Faroe Islands	*	223	*
France	*	27,102	1,500
Italy	*	23,636	*
Irish Free State	*	17,640	*
Great Britain and North Ireland	3,849	8,570	*
Norway	*	*	331
Canada	189,066	1,010,842	45,863
British Honduras	*	36	*
Guatemala	*	123	18
Honduras	*	92	10
Nicaragua	*	*	1
Panama and Canal Zone	*	30,697	*
Salvador	*	10	*
Mexico	1,873	11,366	423
Newfoundland and Labrador	2,045	3,259	*
Miquelon and St. Pierre Is	*	1,951	*
Bermuda	*	1,081	*
Trinidad and Tobago	*	3,526	*
Other British West Indies	*	23	*
Cuba	3,420	28,537	678
Virgin Islands	*	3,433	*
Dominican Republic	*	111	37
Dutch West Indies	*	3,729	*
French West Indies	*	10,577	*
Argentina	*	5,269	*
Brazil	*	39,156	*
Chile	*	*	644
Colombia	503	20	5
Peru	*	992	*
Uruguay	*	3,583	*
British Guiana	*	711	*
Ecuador	*	*	37
Venezuela	15	2	2
Egypt	*	18,981	*
Arabia	*	3,020	*
Total	200,771	1,258,298	49,549
March, 1927	156,028	1,376,001	46,438

During April the United States imported 11,198 gross tons of anthracite, 41,155 tons of bituminous and 6,309 tons of coke. Most of the bituminous —38,750 tons—came from Canada.

British Columbia Coal Output Up.—Output of the coal mines of British Columbia in the first four months of this year totalled 854,236 gross tons, compared with 699,307 tons in the same period of 1926, an increase this year of 154,929 tons, according to figures compiled by the provincial Department of Mines.

Industrial Output Tops Gain in Population

Manufacturing production in the United States has increased about 65 per cent in volume from 1914 to 1925, or about three and one-half times as fast as the population, which has increased less than 18 per cent in the same period, according to the National Industrial Conference Board, 247 Park Avenue, New York. The production per wage earner was 35 per cent greater than in 1914, the volume of production having far outstripped the increase in the number of workers as well as population growth.

These figures hold the chief explanation for the unparalleled growth of our national wealth and income, according to the board, which says it rests primarily on the rising productive and purchasing power of the American wage-earning population.

"Real wages" that is, the weekly earnings of industrial workers, as measured by living costs—since 1914 have increased about 33 per cent, while the "real" national income, as measured in dollars of constant purchasing power, has increased about 28 per cent.

Canadian Dealers' Meeting Studies Pressing Problems

The twenty-third annual convention of the Canadian Retail Coal Association was held at the King Edward Hotel, Toronto, on May 26 and 27, with many coal men attending from Detroit, Buffalo, Rochester, and other cities.

The program for the first day's session included an address by President Frank Dunlop, the report of Secretary Bert Caspell, and four interesting papers. Eliot Farley, president of the D. L. & W. Coal Co., spoke on "Preparation and Sizing." N. R. Fiebeg, Stratford, had for his subject "Revolution in the Retail Coal Business." T. C. Jewell, Bowmanville, discussed "Overhead." J. A. LaBarge, Sudbury, made an address on "Delivery Costs."

The big social event of the convention, which followed, was a complimentary banquet given by five anthracite companies, who, with their representatives, were as follows: Philadelphia & Reading Coal & Iron Co., Leonard Treman, Rochester; Delaware, Lackawanna & Western Coal Co., E. H. Read, Buffalo; Lehigh Valley Coal Sales Co., J. S. Hamilton, Buffalo; Lehigh Coal & Navigation Co., S. M. Stanley, Buffalo; Delaware & Hudson Co., J. B. McMurrich, Oswego.

At the second and closing session, the following made addresses: V. J. Jenkinson, Toronto, "How to Combat the Inroads of Gas and Oil"; Frank Neate, of the Dominion Fuel Board at Ottawa, "Ontario's Fuel Problem"; M. S. Donnally, of the Anthracite Coal Service Bureau, "How to Handle Complaints."

Foreign Market And Export News

Welsh Coal Market Weakens As Production Rises

London, England, May 16. — The Welsh coal market is in a most unsatisfactory state. Demand is falling and there is very little business in most grades. As demand has declined output has risen, so that supplies for spot shipments are very heavy. Most of the pit rail sidings are congested and the avoidance of stoppages in many cases is difficult.

Demand from France is poor. Italian business is below normal and Spanish takings have decreased. Trade to South America and to the coaling depots also has fallen off.

Operators complain that current prices leave very little profit—especially where running time is broken. Relief is expected next month, however, when, for the first time since the strike ended, wages are to be revised. The minimum in Wales probably will be reduced from 42.22 to around 28 per cent over the 1915 base rates. This would mean a cut in costs of 1s. to 1s. 6d. per ton.

Newcastle has enjoyed a slightly better demand for best steams and small steams have steadied somewhat. In most cases, however, pits are finding it difficult to continue steady operations and notices have been given at several workings in Northumberland because of the lack of profitable business.

A slight increase was recorded in exports from Wales last week, shipments aggregating 539,357 gross tons, as against 499,910 tons in the previous week. In addition, patent fuel shipments totalled 47,476 tons, which is the largest quantity shipped for a considerable period.

Belgian Market Backward

Brussels, Belgium, May 18.—Belgian producers are caught between a waning demand for coal and increasing competition for existing business from foreign collieries. The metallurgical and glass-making industries, two of the most important consuming classes, are operating on reduced schedules and sales to these plants naturally are limited. In fact, semi-bituminous and smalls for brick and lime kilns are the only classes in which there is any real activity.

While the pressure from German and British factors has lightened somewhat, the relief in those directions has been offset by increasing competition from the Nord and Pas de Calais mines of France. These collieries are making low-priced offers in Tournaisis and Flanders.

There has been a slight improvement in demand for coke from French sources as the result of disagreement between the French metallurgical interests and the Ruhr ovens. Patent fuels are quoted at 190@220 fr., but demand is light although ovoids are being imported from Holland.

In contrast to the industrial situation the demand for household grades is strong. Anthracite coals are particularly active. Producers well sold up have advanced prices on some household coals 10 fr. and there is some talk of a 15 fr. increase by the first of June.

French Domestic Demand Up; Steam Trade Quiet

Paris, France, May 19. — Many French families already have put in their winter's fuel supply. Many others are placing their orders. As a result there is a heavy demand for sized coals suitable for domestic consumption. The only fly in the ointment is that as soon as these orders have been filled this branch of the trade will come to a standstill.

Something approaching that condition already rules the industrial side of the market. This is due, first, to the reduced industrial activity of the country and, second, to the sharp competition of foreign coals. Great Britain is making a determined drive to dominate the French market and the prices at which British coals are quoted are the dispair of the French producers.

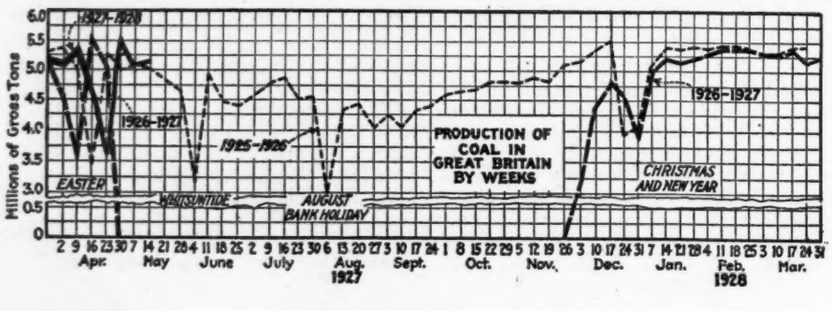
French mines claim that it is impossible to further lower prices without cutting wages and that rates of pay cannot be reduced at this time because of the rising cost of living. Management and men, therefore, have agreed to ask the government to increase the customs duties on foreign coals and to extend the benefits of the freight reductions granted some time ago on fuel shipped to the western departments.

It is believed here that there is little chance that the government will act favorably upon the proposal to increase the import duties. On the other hand, there is more than an even chance that the reductions in railroad rates will be extended.

Unless some relief is granted, coal interests declare that further curtailment in output will be inevitable. Such a step, it is contended, would be unwise. On the contrary, it is argued that steps should be taken to so broaden the market that production may be increased. In this connection it has been suggested that consuming territories be zoned on the basis of a fair division between French and foreign coals.

During April France imported 1,861,551 metric tons of coal, of which 854,340 tons came from Great Britain, 726,003 tons from Germany, 197,569 tons from Belgium-Luxembourg and 12,411 tons from the United States. Coke imports were 388,781 tons; of this quantity, 302,866 tons were imported from Germany. Patent fuel imports totaled 72,303 tons.

Exports the same month were 290,464 tons of coal, including 84,877 tons to Germany and 87,914 tons to Belgium-Luxembourg; 22,519 tons of coke and 16,147 tons of patent fuel.



Export Clearances of Coal Week Ended May 26

FROM HAMPTON ROADS

	Tons
For Uruguay:	
Br. Str. Lucille de Larrinaga, for Montevideo	5,997
For Cuba:	
Br. Str. Dowanhill, for Havana	3,886
For Danish West Indies:	
Nor. Str. Bratland, for Curacao	4,223

Hampton Roads Coal Dumpings*

(In Gross Tons)

	May 19	May 26
N. & W. Piers, Lamberts Pt.:		
Tons dumped for week	132,411	99,954
Virginian Piers, Sewalls Pt.:		
Tons dumped for week	118,368	84,542
C. & O. Piers, Newport News:		
Tons dumped for week	133,244	152,696

* Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shippers' protest.

Pier and Bunker Prices

(Per Gross Ton)

PIERS

	May 19	May 26†
Pool 1, New York	$5.50@$5.75	$5.50@$5.75
Pool 9, New York	5.00@ 5.25	5.00@ 5.25
Pool 10, New York	4.75@ 5.00	4.75@ 5.00
Pool 11, New York	4.50@ 4.75	4.50@ 4.75
Pool 9, Philadelphia	4.80@ 4.95	4.80@ 4.95
Pool 10, Philadelphia	4.55@ 4.80	4.55@ 4.80
Pool 11, Philadelphia	4.35@ 4.70	4.35@ 4.70
Pool 1, Hamp. Roads	4.60@ 4.75	*4.50*
Pool 2, Hamp. Roads	4.40	*4.30*
Pool 3, Hamp. Roads	4.00@ 4.15	*4.00@ 4.10*
Pools 5-6-7, Hamp. Rds.	4.25@ 4.40	*4.20*

BUNKERS

	May 19	May 26†
Pool 1, New York	$5.75@$6.00	$5.75@$6.00
Pool 9, New York	5.25@ 5.50	5.25@ 5.50
Pool 10, New York	5.00@ 5.25	5.00@ 5.25
Pool 11, New York	4.75@ 5.00	4.75@ 5.00
Pool 9, Philadelphia	5.00@ 5.20	5.00@ 5.20
Pool 10, Philadelphia	4.80@ 5.05	4.80@ 5.05
Pool 11, Philadelphia	4.60@ 4.95	4.60@ 4.95
Pool 1, Hamp. Roads	4.75	*4.60*
Pool 2, Hamp. Roads	4.50	*4.40*
Pools 5-6-7, Hamp. Rds.	4.40	*4.30*

†Advances over previous week shown in **heavy type**; declines in *italics*.

Current Quotations, British Coal F.o.b. Port, Gross Ton

Quotations by Cable to *Coal Age*

Cardiff:	May 21	May 28†
Admiralty, large	23s.	23s.
Steam smalls	16s.	*15s.*
Newcastle:		
Best steams	19s.	19s.
Best gas	17s.6d.	17s.6d.
Best bunkers	16s.6d.	*16s.*

†Advances over previous week shown in **heavy type**; declines in *italics*.

Trade Literature

Kangaroo Konveyor. Link-Belt Co., Chicago, Ill. Book No. 921. Pp. 15; 8½x11 in.; illustrated. Describes the high and low-type drives, oiling system, troughs, housings, right-angle drive, etc. The Kangaroo shovel also is illustrated and described.

Type RH 40 Benz Diesel Engine. Chicago Pneumatic Tool Co., Chicago, Ill. Bulletin 774. Pp. 19; 8½x11 in.; illustrated. General description with details of construction.

Golden Glow Flood Lighting Projectors. Electric Service Supplies Co., Philadelphia, Pa. Bulletin No. 236. Pp. 31; 6x9 in.; illustrated. The different types of Golden Glow projectors are described, the new 24-in. floodlight being featured, as are also those of smaller size.

The Atlas Car & Mfg. Co., Cleveland, Ohio, has issued the following two bulletins: **Battery Changing Station for Storage-Battery Locomotives,** bulletin 1226 and **Special Type "A" Storage Battery Locomotive for Metal Mining Service,** bulletin 1227. These are four-page folders and illustrated.

The Mine Safety Appliances Co., Pittsburgh, Pa., has issued the following four-page folders: **M.S.A. La France Mine Fire Truck,** giving principle of operation and detailed specifications. **M.S.A. Continuous Methane Recorder,** designed to record continuously the exact amount of methane present in the return air. Both folders are illustrated.

Caldwell Speed Reducer. Link-Belt Co., Chicago, Ill. Book No. 630. Pp. 19; 6x9 in.; illustrated. The salient features of the reducer are described. Price lists of types A and B also are included.

Paralleling Reactors, Type RR for for 115 volts to 575 volts, and Type SR for 2399 to 6900 volts, single phase, are illustrated and described in leaflets 20317 and 20316 respectively, issued by the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.

Newark Wire Cloth Co., Newark, N. J., has issued catalog No. 26, containing information and list prices on double crimped heavy steel wire screens, regular coal screens, steel wire cloth, gasketed metallic filter cloth, etc.

The International Nickel Co., New York City, has issued Bulletin No. 10, **Chrome Nickel Steel in Special Track Work.** The bulletin contains 8 pp. and is a scientific and practical discussion of the characteristics of this new steel.

Hendrick Mfg. Co., Carbondale, Pa., has issued a four-page folder illustrating and describing its **Flanged Lip Screens.**

The Clements Cadillac Blower is described and illustrated in a folder issued by the Clements Mfg. Co., Chicago, Ill. Prices are included.

Handling Things—From Where They Are to Where You Want Them. Link-Belt Co., Chicago, Ill. Book 575. Pp. 96; 6x9 in.; illustrated. Covers the application of elevators and conveyors to a variety of plant conditions.

New Equipment

Portable Standard Meter Is Practically Errorless

A portable meter, to be used as a standard in meter testing, has recently been introduced by the General Electric Co., Schenectady, N. Y. The new meter, designated as Type IB-7, is built for either 110 or 220 volts, 25 or 60 cycles, and 1/5/20 amp. The effects of variation in voltage, frequency and power-factor are said to have been

Useful in Meter Testing

Small and light in weight, this standard meter is not only easily portable but is also said to be practically free from errors due to changes in temperature, frequency, voltage and power-factor.

reduced to negligible values. Practically entire freedom from temperature errors is also claimed.

The case of this instrument is made of cast aluminum alloy, finished in black lacquer and is provided with a black leather carrying strap. The white enamel dial is easily read against the black bakelite top. A light, rigid, aluminum alloy frame supports the entire meter element, and is firmly attached to the molded bakelite top. The base of the frame is flat, so that when the metering unit is removed from the case it stands upright on the bench, facilitating inspection or adjustments.

On both full and light loads, adjustments are made with micrometer screws. The meter is also provided with an adjustment for regulating its operation on inductive loads. The one-ampere winding is protected from accidental overload or short circuit by a fuse, and a spare fuse is carried in the cover. A gasket between the top panel and the case makes the meter dust- and moisture-proof. The dial chamber is similarly protected by a gasket between the flange and top panel. A zero set-back device is controlled by a knurled bakelite knob. The terminals are also of molded bakelite with positive grips.

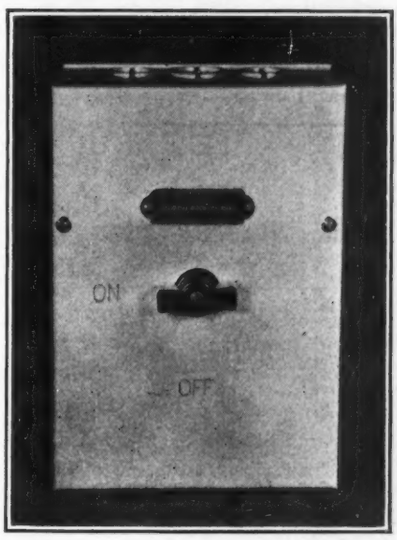
Rolls With Boltless Segments

A new boltless segment crushing roll has lately been placed on the market by Carl Finger, of Wilkes-Barre, Pa. The faces of the segmental elements are beveled at the ends, and end members having beveled inside faces engaging the same are held together by means of tierods or bolts extending longtitudinally through the roll. To prevent the segmental elements from moving circumferentially of the roll, a projection is cast on the inner face of each segment near the end thereof, which is received between corresponding lugs cast on the inner faces of the disks or spiders which form the ends of the roll.

The construction of the segmental elements is greatly simplified, and they may be made with correspondingly less expense than heretofore. The end of each segmental element is individually clamped to the rim by a segment of a ring, so that the danger of the segmental elements becoming loose is practically eliminated, and no machining is necessary. At the same time, when these elements are worn out they may be easily and quickly replaced.

Many New Switches Added To Standard Lines

New designs of switches recently have been added by the Westinghouse Electric & Manufacturing Co., of East Pittsburgh, Pa., to its standard WK-60, WH-61, WK-62 and Midget lines. In addition to these, a new range switch, for flush or surface mounting, that is



Range Switch Has Surface Mounting

Also obtainable with flush mounting, this switch is both compact and neat in appearance.

said to have many advantages, has also been introduced.

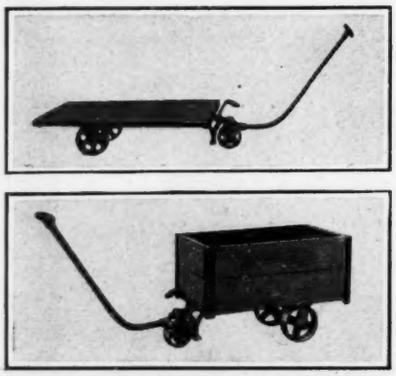
A complete set of designs, including solid third-wire switches of the three-blade, two-fuse type, comprises the addition to the WK-60 group. The WK-62 group has been augmented by the addition of four-wire switches consisting of four blades and three fuses for use on three-phase, grounded neutral systems. Five-wire switches, with four blades, four fuses and a solid neutral block, for use on two-phase interconnected grounded neutral systems, have also been added to this line. The new WK-61 switches consist of a 600-amp. switch and a complete range of ratings in double-throw switches, fusible at each end. N.E.C. fusible switches, solid neutral switches, and special designs for small motor work, have been added to the Midget and type "00" line of switches.

The new range switch is attractively designed for both flush or surface mounting, and is operated by a handle in the front. This switch is compactly built and neat in appearance. It is said to be particularly applicable to ranges not requiring over 40 amp. at 250 volts, or 40-amp., three-wire current at 125 volts. The rating on the type WK-22 motor starter has been increased from 5 to 10 hp. at 220 volts.

Small Three-Wheeled Truck Has Wide Usefulness

The trade name "Jak-Tung" has recently been applied to the small three-wheeled truck manufactured by the Howe Chain Co. of Muskegon, Mich. This truck can be used for either hauling or storage. It consists of a platform equipped with two malleable-iron wheels at the rear and a malleable iron draw bar in front. The jack tongue (from whence the truck takes its name) with wheel hooks into the draw bar. By a downward thrust of the handle, the load is raised and may be hauled anywhere.

This truck is built in 17 different sizes and 3 models, with either steel or hardwood platforms or trays—in varied combinations. Obviously, it finds its greatest usefulness as a material conveyor in plants that handle loose, bulk and package freight, or heavy pieces of equipment up to 3 tons in weight.



Small, But of Large Capacity

The illustration shows two of the several different types in which this truck is obtainable. Elimination of congestion, as well as the avoidance of double handling, are among the advantages claimed for this machine.

Advantages claimed for this truck are that, since materials are kept on wheels from one operation to the next, congestion and spoilage, in addition to the expense of double handling, are obviated. It is said that trains of eight or ten of these trucks, together with a tractor, will wind around machines, turn sharp corners, negotiate narrow passages, and in other ways function efficiently and "track" perfectly in congested quarters.

Industrial Notes

Fox Brothers International Corporation—A subsidiary of the exporting firm of Fox Bros. & Co., Inc., of 126 Lafayette Street, New York—announces that it has made arrangements with banking interests in New York and London which will insure a credit against acceptance documents on Russian purchases to the amount of $5,000,000 for the current year. Under this arrangement American exporters will be paid in cash for Russian purchases. It is stated that the corporation was formed to facilitate purchases of engineering equipment and other things of which the Soviet Government is in urgent need in the American market. Under existing economic and industrial conditions the Russian Government cannot pay cash for its requirements and American manufacturers do not feel warranted in extending the long-term credits that are necessary. John J. Teal, vice-president of the corporation, says there is a strong sentiment in Russia for goods of American manufacture, especially in lines of mechanical equipment.

G. E. Wearn has been appointed central station sales manager of the **Westinghouse Electric & Mfg. Co.**, according to an announcement by E. D. Kilburn, vice-president and general sales manager of the company. This appointment takes effect immediately and Mr. Wearn will be located in New York City.

Recent Patents

Valve for Rock Drills; 1,621,254. George W. Hulshizer, Stewartsville, N. J., assigner to Ingersoll-Rand Co., Jersey City, N. J. March 15, 1927. Filed Dec. 17, 1925; serial No. 76,016.

Automatic Coupler for Miners' Cars; 1,621,419. Thomas Kolinger and Louis Habunek, Martins Ferry, Ohio. March 15, 1927. Filed Jan. 13, 1926; serial No. 80,879.

Rock Drill; 1,623,419. Gordon Lee, Easton, Pa., assignor to the Ingersoll-Rand Co., Jersey City, N. J. April 5, 1927. Filed June 18, 1926; serial No. 116,910.

Coal Drying; 1,623,553. Oliver W. Randolph, Toledo, Ohio. April 5, 1927. Filed Dec. 24, 1923; serial No. 682,489.

Process for Briquetting Bituminous Coal; 1,623,764. S. R. Wagel, New York, N. Y., assignor to the Lehigh Coal & Navigation Co., Philadelphia, Pa. April 5, 1927. Filed June 16, 1924; serial No. 720,451. Renewed July 31, 1926.

Flotation Apparatus; 1,624,559. Tom M. Owen, Wallace, Idaho, and M. P. Dalton, Mullan, Idaho. April 12, 1927. Filed July 5, 1924; serial No. 724,250.

Cage-Locking Means; 1,624,759. Stephen J. Reap, Olyphant, Pa. April 12, 1927. Filed June 1, 1926; serial No. 112,998.

Coming Meetings

National Retail Coal Merchants Association. Annual convention June 6-8, Detroit, Mich. Resident vice-president, Joseph E. O'Toole, Washington, D. C.

Association of Iron and Steel Electrical Engineers. Annual convention in conjunction with the Iron and Steel Exposition, at Pittsburgh, Pa., June 13-18. Secretary, John F. Kelly, Empire Bldg., Pittsburgh, Pa.

New England Coal Dealers' Association. Annual meeting June 14-16, Hotel Griswold, New London, Conn. Executive secretary, E. I. Clark, Boston.

Colorado and New Mexico Coal Operators Association. Meeting at Boston Building, Denver, Colo., June 15. Secretary, F. O. Sandstrom, Denver, Colo.

National Coal Association. Annual meeting June 15-17, at Edgewater Beach Hotel, Chicago. Executive Secretary, Harry L. Gandy, Washington, D. C.

Illinois Mining Institute. Summer meeting June 16-18 at La Salle, Ill., by Steamer Cape Girardeau. Secretary, Frank F. Tirre, 603 Fullerton Bldg., St. Louis, Mo.

American Society for Testing Materials. Thirtieth annual meeting, French Lick Springs Hotel, French Lick, Ind., June 20-24. Secretary, C. L. Warwick, 1315 Spruce St., Phila., Pa.

American Institute of Electrical Engineers. Summer convention, June 20-24, at Detroit, Mich. Regional meeting, May 25-27, Pittsfield, Mass. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

Mining Society of Nova Scotia. Annual meeting at Baddeck, Nova Scotia, Canada, June 21-22. Secretary-Treasurer, E. C. Hanrahan, Sydney, N. S., Canada.

International Chamber of Commerce. Fourth congress at Stockholm, Sweden, June 27 to July 2.

Michigan-Ohio-Indiana Coal Association. Annual convention at Cedar Point, Ohio, June 28-30. Secretary, B. F. Nigh, Columbus, Ohio.

Illinois and Wisconsin Retail Coal Dealers' Association. Annual convention, the Hotel Pfister, Milwaukee, Wis., June 28-30. Managing Director, N. H. Kendall, 706 Great Northern Bldg., Chicago, Ill.

Annual First-Aid Meet for championship of Pennsylvania (open to mining and industrial teams), Ebensburg Fair Grounds, July 9. Superintendent, H. D. Mason, Jr., Box 334, Ebensburg, Pa.

Second (Triennial) Empire Mining and Metallurgical Congress opens at Montreal, Can., Aug. 22 and continues to Sept. 28, under the auspices of the Canadian Institute of Mining and Metallurgy. Secretary, George C. Mackenzie, 604 Drummond Building, Montreal, Can.